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Number 2.

NOVEMBER, 1908.

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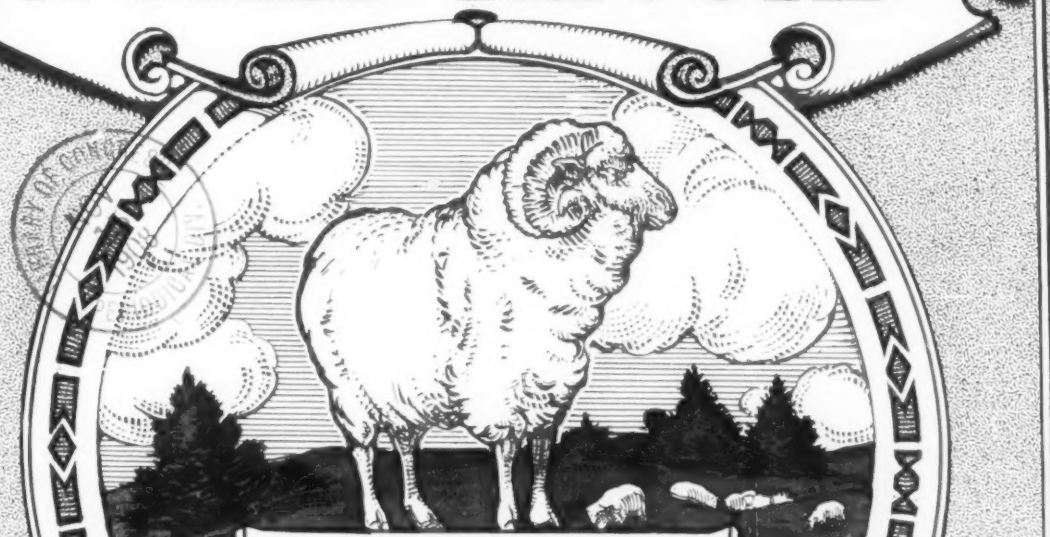
$3.00 with Directory.

TEXTILE WORLD RECORD



Special Features

The Cost of Manufacturing Wool Goods at Huddersfield and Roubaix.

Moisture in Textile Materials.

Ribbon Weaving.

Full Fashioned Knitting.

Practical Notes From the Records of a Cotton Mill Manager.

LORD & NAGLE COMPANY BOSTON, MASS.

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The Textile-Finishing Machinery Co.

HOWARD BUILDING

STAIRWAYS, 83 EXCHANGE PLACE [ENTRANCES] ELEVATOR, 171 WESTMINSTER ST.

PROVIDENCE, R. I.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

Calenders for Rolling Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

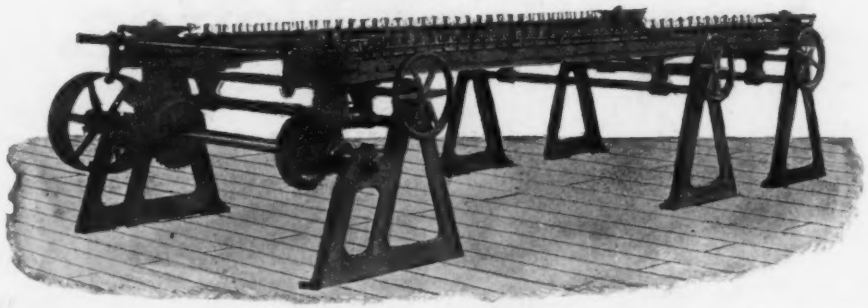
Hydraulic Presses and Pumps.

Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application

Southern Agent, STUART W. CRAMER, Charlotte, N. C., Equitable Building, Atlanta, Ga.



STRAIGHT AUTOMATIC TENTERING MACHINE

Dyeing, Bleaching, Drying and Finishing Machinery

for all textile fabrics.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Providence Office, Room 417 Industrial Trust Building.

Important Notice.

As manufacturers of the **CAMLESS WINDER** we are unquestionably in the best position to judge of its real merit.

The following figures show the DUPLICATE sales to four of the most prominent fine yarn mills in NEW ENGLAND. Exact copy from the books of this shop.

Mill No. 1	Mill No. 2	Mill No. 3	Mill No. 4
16, 32, 48, 48, 48, 64, 16, 64, 64, 64, 320, 48, 96.	32, 64, 320, 288, 128, 112, 64, 96, 128, 144, 96, 64, 112, 288, 96.	32, 96, 256, 384.	576, 32, 192, 128.

In addition to above over 11,000 spindles have been sold.

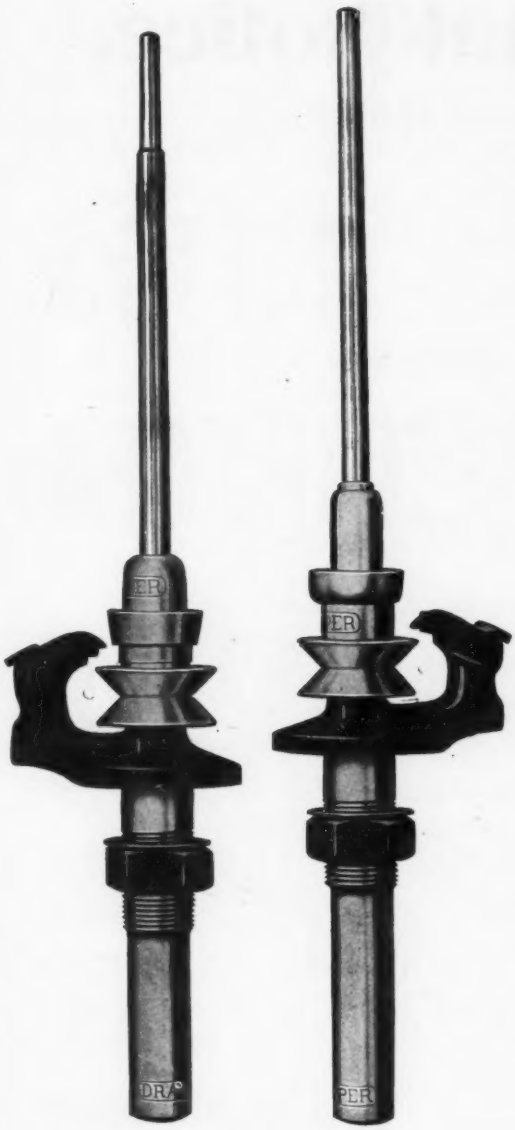
We are the original promoters of the increased taper cone, which has been greatly instrumental in furthering the machines's success.

The KNITTER investigated, approved, and supported.
The SPINNER compared, approved, and accepted.

Correspondence solicited.

Lowell Machine Shop,

Lowell, Massachusetts.



Two New
Large Size
Spinning Spindles.

We make

Draper,
Whitin,
McMullan

and other
types of

Spindles;

also

Northrop Looms,

Twisters,
Warpers,
Spoolers,
Reels,

Banding Machines,

etc., etc.

Draper Company,
HOPEDALE,
MASS.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

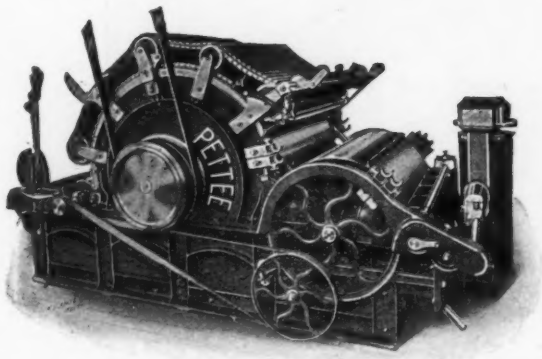
The Stafford Company

Readville, Mass.

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



Shops—

Biddeford, Me.

Newton Upper Falls, Mass.

Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

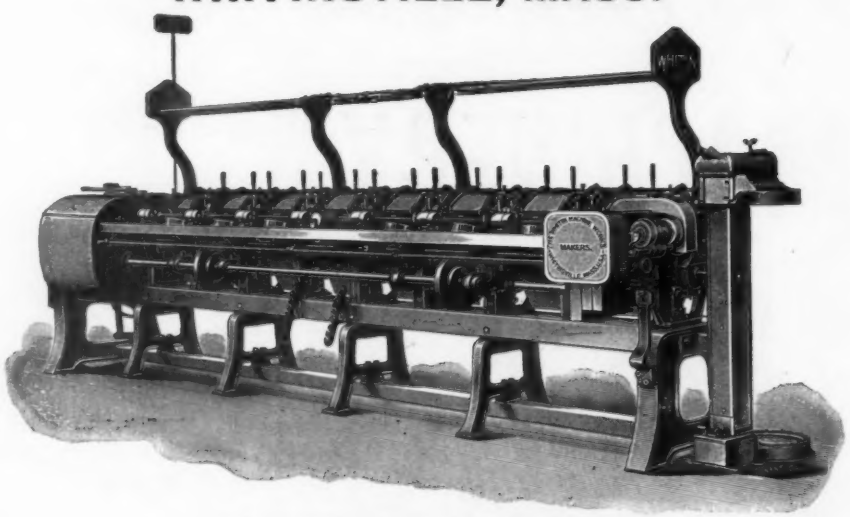
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

SCOTT & WILLIAMS

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BUILDERS OF

Full Particulars, Samples nnd Special Catalogues on Application.

Rib Knitting Machinery for Underwear and Hosiery

Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

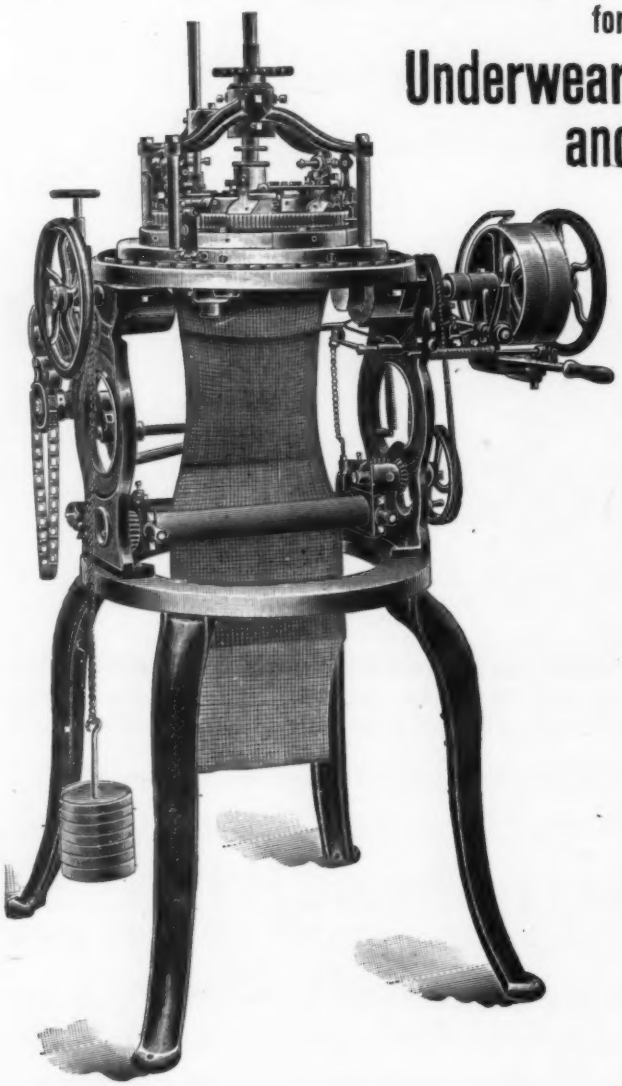
Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.



The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

UNIVERSAL WINDING MACHINES

For Coning, Tubing, Doubling, Multiple Winding and Quilling

Are the most economical.
They give a maximum production
in a minimum of floor space.

The Universal Bobbin Winder increases shuttle yardage two to four fold, stops waste in the shuttle, improves the quality of the fabric, reduces the cost of weaving. Winds on wooden bobbins, metal bobbins or paper cop tubes.

Universal Winding Co.

95 South Street, Boston, Mass., U. S. A.

International Winding Company

Saville Street, Oxford Road, Manchester, England

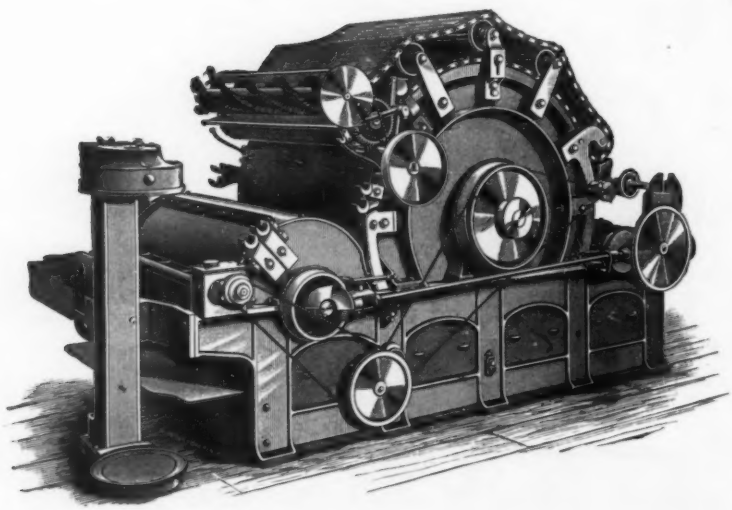
16 St. Johannvorstadt, Basel, Switzerland

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

INCLUDING

Plain and Fancy Silk Looms

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S,
Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'.

Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

ESTABLISHED 1865

Jacob K. Altemus

Office: 2824 North 4th St., Philadelphia, Pa.

MANUFACTURER OF

TEXTILE MACHINERY

Makes a specialty of machinery for

Spooling
Warping
Beaming
Winding

Years of experience in machinery for the 4 great factors in Textiles gives us advantages which we are able to maintain and for winding stunts we are able to take care of all that comes along.

Our new machine for Rewinding Yarn onto Shuttle Bobbins puts on from 20 to 300 per cent more yarn than before

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Crabbing Machine. *Bulletin 70*

The Hunter CRABBING MACHINE

A COMBINATION machine permitting the Crabbing of goods by the Intermittent or Continuous process.

Two machines in one.

Either process of Crabbing may be used to the exclusion of the other, or both systems may be applied to the same piece.

This machine developes the pattern.

It imparts luster and sets the weave.

It prevents wrinkling or cockling and gives softness yet firmness to the fabric.

It makes cloudy goods impossible, brightens colors and imparts an absolutely uniform finish that can be duplicated.

For Resist Dyes it is a wonder.

It produces no seconds but goods that sell.

It is for progressive manufacturers who are only satisfied with the best.

Bulletin 70 fully describes it.

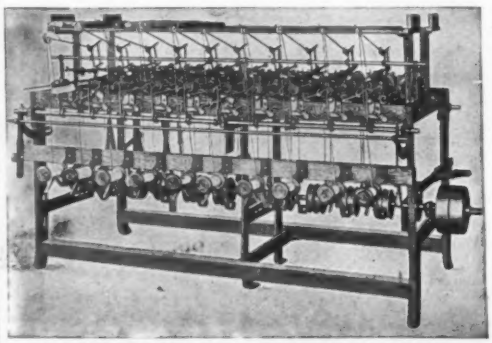
OSWALD LEVER CO.

(Formerly LEVER & GRUNDY.)

Lehigh Ave. and Mascher Sts., PHILADELPHIA, PA.

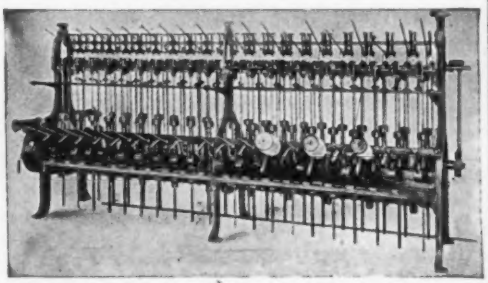
MANUFACTURERS OF TEXTILE MACHINERY.

SOLE MAKERS OF OUR PATENTED SPECIALTIES IN THE UNITED STATES.

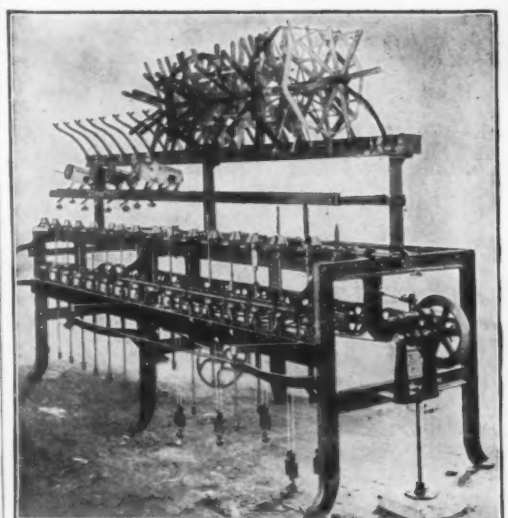


This Machine may be arranged to wind from skeins, spools, cones, or any kind of spinning bobbins. Most suitable machine for cotton or woolen blankets.

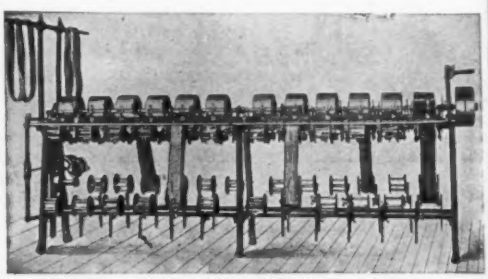
Conical and Parallel Tube Winding Machines; Warping Machines and Creels; Brass Bobbin Winding and other Machinery for lace mills; Chenille Cutting Machines, Sectional Warping Mill, Beaming Machines, etc; Cop Winding Machines for butts to weave from outside; Filling Bobbin or Quill Winding Machines; Vertical Spindle Spooling Machine for silk, fine cotton, wool and worsted; Variable Speed Bobbin Machines for large bobbins used in knitting mills; Dresser Spooling Machines; Reeling Machines.



Vertical Spindle Gear Driven Winder, as used by all manufacturers of heavy duck, jute, cotton, bagging and carpets.



High Speed Cross Quiller to wind from skeins, spools or mule cops on two quills or paper tubes. It is built to run from 1800 to 2400 revolutions.



Pressure Drum Spooling Machine. This machine is adapted for spooling any kind of yarn, whether from mule cops or skeins.

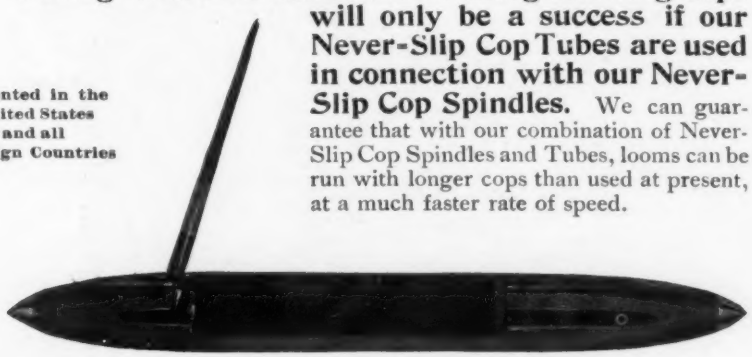
Never-Slip Cop Spindles and Tubes

Never-Slip Cop Tube

Patent applied for.

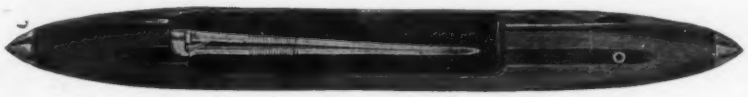
Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed.



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

American Textile Specialty Machinery Co.

MANUFACTURERS OF

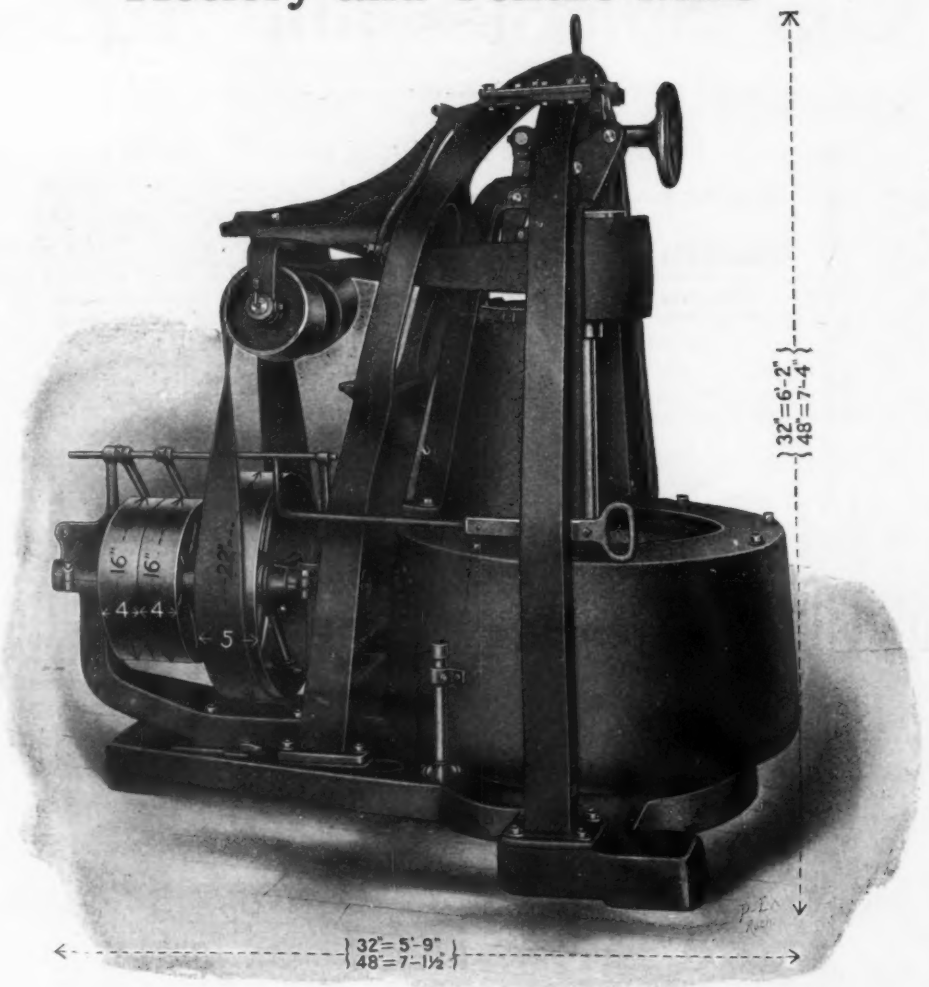
Shuttles and Shuttle Irons for all Textile Purposes.

New York Office, 363-373 Rider Ave. **670 Eddy St., Providence, R. I.**

Open Driven Extractors

FOR

Hosiery and Textile Mills



The American Laundry Machinery Mfg Co

Western Division
78-80 Franklin St.
Chicago

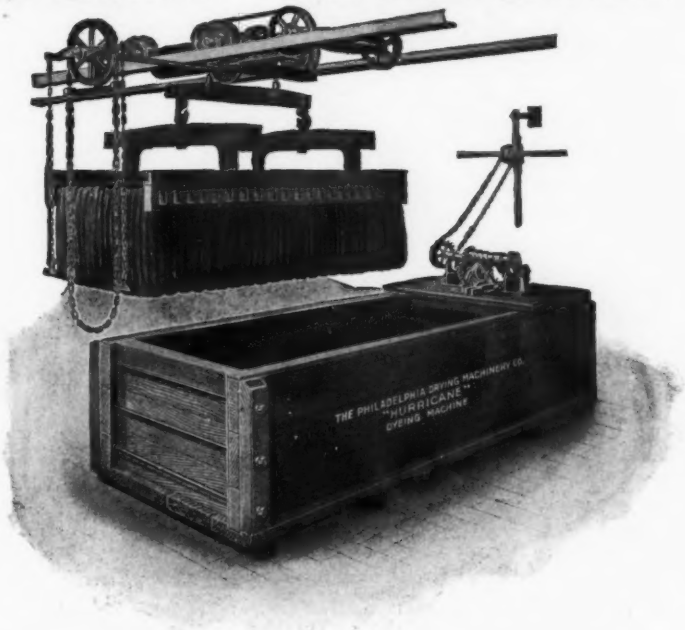
Eastern Division
132-138 W. 27th St.
New York

Southern Division
Station "H"
Cincinnati

You Want Results

SAVINGS

75% in Labor
50% " Steam
35% " Dyes



Skein Dyeing Machine, with Yarn Frame suspended.

"HURRICANE" CIRCULATING DYEING MACHINES

FOR YARN, HOSIERY, ETC.

ARE IN A CLASS BY THEMSELVES

BECAUSE

The material is under the liquor during the entire operation of dyeing.
The uniform flow of the liquor upward and downward is controlled AUTOMATICALLY.
The improved Pneumatic Hoist handles the frame or basket quickly and with remarkable ease.
There are other reasons equally as good. Let us submit figures for your consideration.

THE PHILADELPHIA DRYING MACHINERY COMPANY

"Hurricane" Dyeing, Drying and Finishing Machinery
Power Screw and Hydraulic Presses
6721 Germantown Ave., Philadelphia, Pa.

Indispensable to the Trade

1908-9 Edition

Official American Textile Directory

Compiled by the Textile World Record

What the Directory Contains

Over 13,000 Different Concerns Listed

A Complete Directory of Mills including Cotton, Woolen, Knitting, Silk, Flax and Jute Mills of the United States, Canada and Mexico together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments, about 7000 in all.

Full information is given about each mill in almost every instance, viz: the name of the company or firm, names of officers, agent, superintendent, the character of goods made, machinery equipment, i.e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dyehouse or not, the names of the selling agents or if the mill sells direct, and in many instances the name of the man is given who buys the raw material and supplies. In this section of the Directory, all the mills in one place are arranged under the head of that town, but so designated by boldface letters, that the kind of mill is determined at a glance, so that a person, looking, for instance, only for woolen mills, can pick them out instantly. This system of arrangement is conceded to be the most convenient of any as it groups all the mills in one town together and is self-indexing, while at the same time those interested in a particular class of mills, such as cotton, silk or knit, can find them as easily as if they were classified separately.

The Map Feature was originated by the Textile World in 1894, and is copyrighted. There are 19 of these textile maps, which show only the cities and towns where there are textile establishments. 19 maps.

An Alphabetical Index to the textile establishments in the United States; about 7000.

Mills with Worsted Machinery. A separate list is compiled of mills with worsted machinery for the convenience of those dealing exclusively with that branch.

The Yarn Trade Index. In this department are classified lists of manufacturers of different kinds of yarn who spin for the market. It gives the size of yarn spun and the form in which the yarn is put up, together with the selling agents of the mills, or, if sell direct. About 900 names.

Classified List of Manufacturers. This is a new section in which all the manufacturers of textile fabrics are listed under suitable headings showing the classes of goods made.

The Textile Mills in Mexico. This feature of the American Textile Directory is continued and brought up to date by the latest information. About 300 mills.

Commission and Order Section. In this department are classified lists of establishments doing dyeing. bleaching, printing, finishing and mercerizing on order, sub-divided according to the class of work done. About 500 names.

Raw Material Section. In this department are complete lists of dealers and brokers in wool, cotton, shoddy and extracts, and wholesale rag dealers. About 2200 names.

Selling Agents and Dry Goods Commission Houses in the principal cities of the Unifed States, giving the character of goods handled. About 2300 names.

Textile Associations. Owing to the growing number of inquiries for information of the various associations a list of all the textile associations in the United States and Canada has been included in this year's Directory. The names of assaociations, officers and addresses are given.

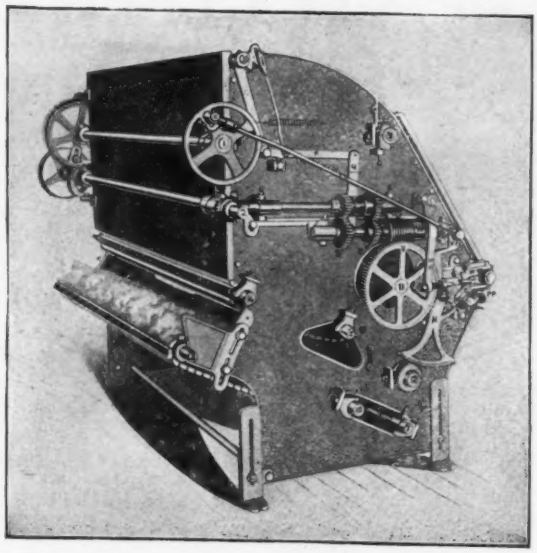
Machinery and Supply Section. This contains a carefully classified index of builders of textile machinery and dealers in mill supplies. About 800 names and 500 headings.

Lord & Nagle Company

Textile Publishers, 144 Congress St., Boston

NEW YORK PHILADELPHIA CHICAGO

THE FISHER PATENT CARD FEED



Write Us For List of Mills Where Machines Are Used.

Woonsocket Machine and Press Company

WOONSOCKET, R. I.

TAPES, BRAIDS AND RIBBONS

for the Mill and Manufacturing Trade

WICK NARROW FABRIC CO.
PRODUCERS OF SPECIALTIES
726-728 Market Street, Philadelphia
Address Department Z

STARCH.

Increased efficiency in

WARP SIZING

with LESS COST by using

Adhesive Value:

One pound of "C. P. SPECIAL" contains a sizing value of from one to one and a half pounds of any other starch.

"C. P. SPECIAL" requires no heavying or stocking up after standing.

Sizing Qualities:

"C. P. SPECIAL" dries without sticking on slasher cylinders.

"C. P. SPECIAL" penetrates yarn thoroughly.

"C. P. SPECIAL" increases tensile strength of yarn from 5–10 percent.

"C. P. SPECIAL" boils quickly and produces good, smooth size.

Weaving:

Warps sized with "C. P. SPECIAL" draw in and weave to entire satisfaction.

"C. P. SPECIAL" will not dust off under your looms.

Demonstration:

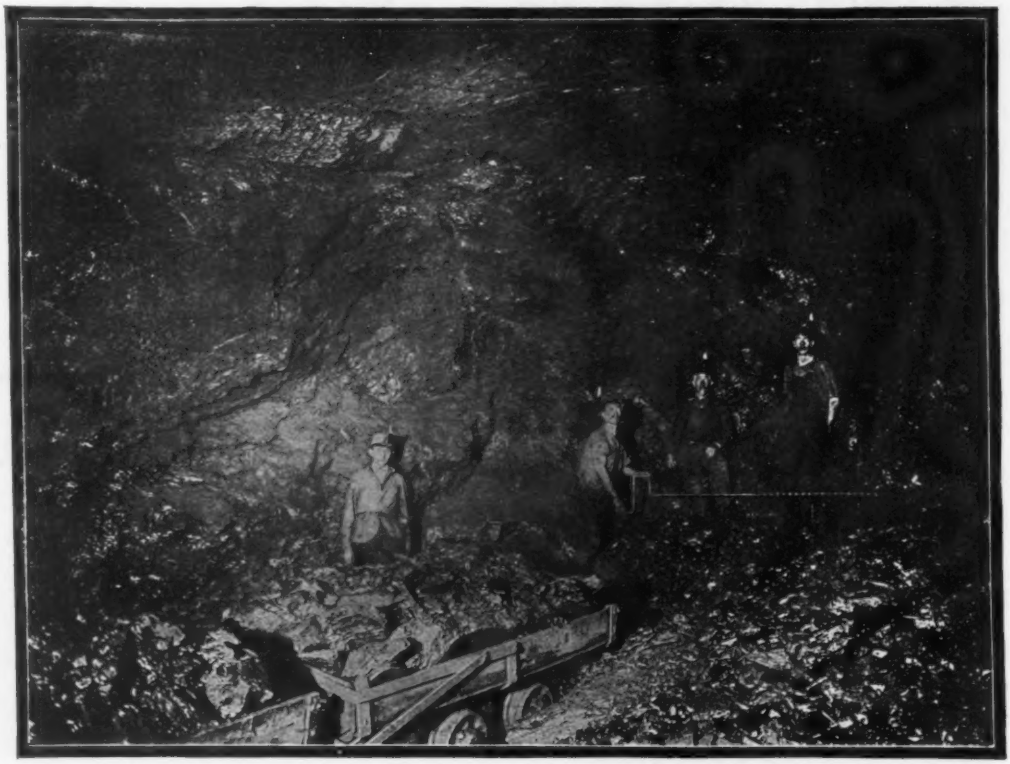
We are ready to demonstrate in your mill—free of cost—just what "C. P. SPECIAL" will do.

100 lbs. "C. P. SPECIAL" will be sent on request to any responsible Cotton Manufacturer for demonstration purposes.

Corn Products Refining Co., New York, N. Y.

Average selling price about $2.00 per ton

A clear profit of over $1.00 per ton for every ton mined. Photograph shows thickness of vein, ease of working, and excellent quality.



"Battle Creek" seam of coal which underlays 7000 acres of coal land in Tennessee owned by this Company.

The Cross Creek 6% Gold Bonds carry with them a bonus of preferred stock, giving a good income return on the bonds and probable very handsome profit on the stock.

Write for particulars.

Cross Creek Coal Company,

1006 Mutual Life Bldg., Buffalo, N. Y.

Cross Creek 6% First Mortgage Sinking Fund Gold Bonds

This bond issue (**$250,000**) is a first lien on **7000** acres of coal lands and all improvements. Every ton of coal mined pays into the sinking fund **10c,** so that each year a certain portion of the indebtedness is paid off. The interest, payable semi-annually, at the office of the Hamilton Trust and Sav. Bank, Chattanooga, Tennessee, is **6%**, and the preferred stock accompanying the bonds is entitled to **6%** of the earnings, ahead of the common stock.

As showing the development of the coal business in the United States, the United States Geological report shows that in 1814 the total production was **22** tons; in 1906 the tonnage was **414,157,278** tons and in 1907, **480,363,424** tons, or an increase in tonnage in one year of over **66,000,000,** or more than the total production in 1878.

Less than $50,000 of these bonds remain to be sold. Early application is suggested

Cross Creek Coal Company,

1006 Mutual Life Bldg., Buffalo, N. Y.

Perfect Friction
Insures Good Cloth

TRY

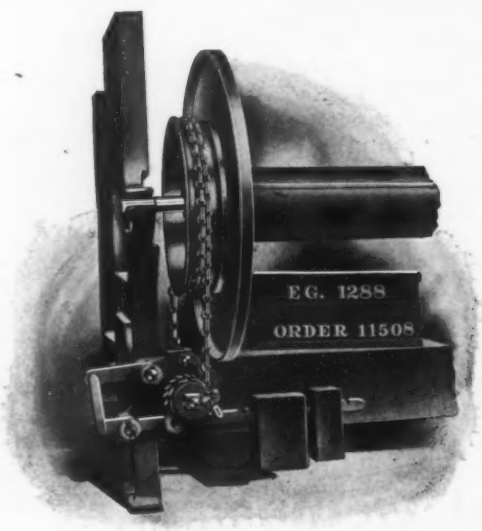
Exact Size of Chain

Community Friction Chain
On Some of Your Looms

Over 200 representative mills
are now using it.

Community Friction Chain

will outwear Cord or Rope many times over



Advantages

Even and uniform friction,
Strong and durable,
Won't break,
Easily adjusted,
Saves labor,
Produces perfect cloth.

Write Us
for Prices and Catalogue

Oneida Community, Ltd., Oneida, N.Y.

We make a specialty of

Beaming Machinery

and

Warp Compressors

For Woolen and Worsted Mills. Sizing or Dry Dressing.

IN COTTON MILLS

We attach our regular **warp-compressor** to slashers, guaranteeing from 30% to 60% more yarn per loom beam, making better weaving warps.

FOR COTTON DUCK MILLS

We build an EXTRA HEAVY and a DOUBLE EXTRA HEAVY duck beamer, with a **tremendously heavy** and **powerful WARP COMPRESSOR**. Either single or double drive, for wide or narrow goods.

Dry Slashers. Chain Beamers, Long Chain Beamers, Tail Blocks.

COMPRESSING SPOOLERS AND ROYAL WORSTED SPOOLERS

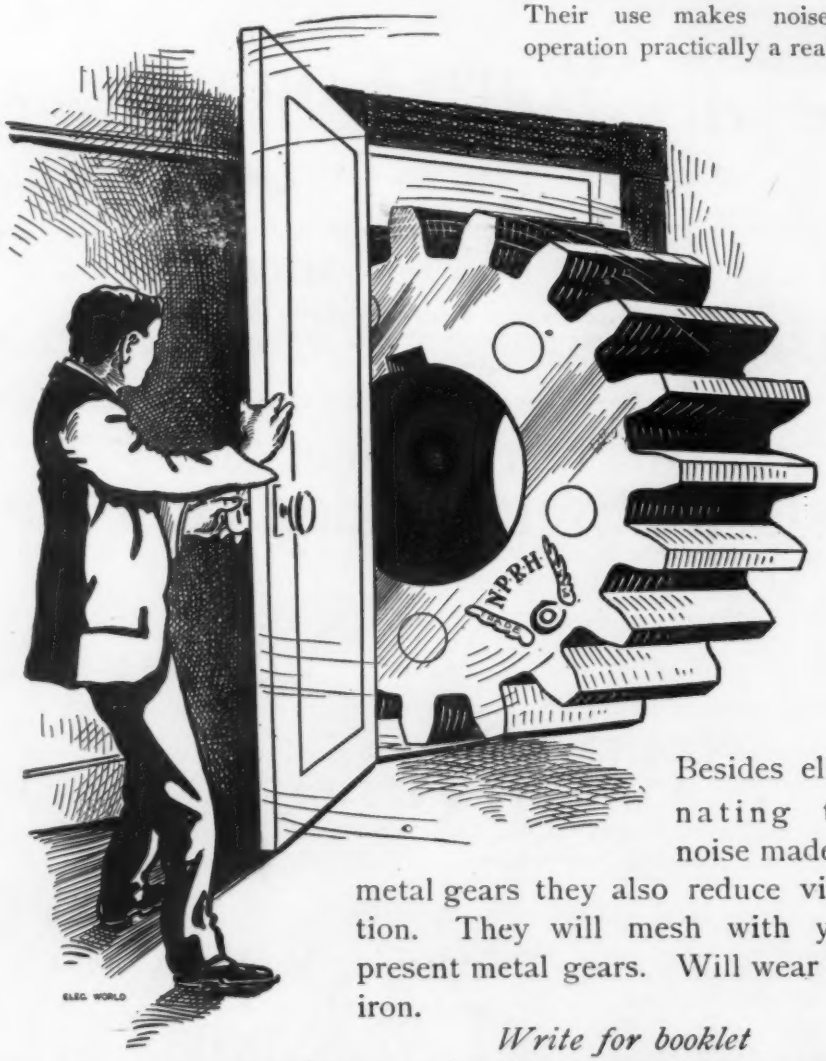
With OUR positive, "quick," cross-wind traverse and Automatic stop-motions. PERFECT Jack-Spooling.

Worcester Warp Compressing Machine Company
Worcester, Mass.

Open Your Door to New Process Noiseless Pinions

Once in your plant they will prove their value

Their use makes noiseless operation practically a reality.



Besides eliminating the noise made by metal gears they also reduce vibration. They will mesh with your present metal gears. Will wear like iron.

Write for booklet

THE NEW PROCESS RAW HIDE CO. SYRACUSE, NEW YORK

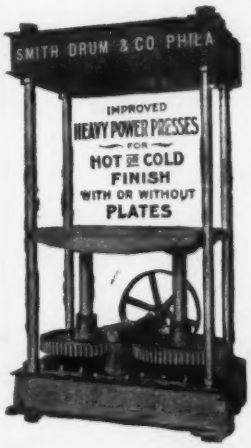
SMITH, DRUM & CO.

"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing Singeing and Finishing

HOSIERY

IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES



If you wish to **SAVE LABOR** and **DYE STUFF** and do **BETTER WORK** in your dye house see

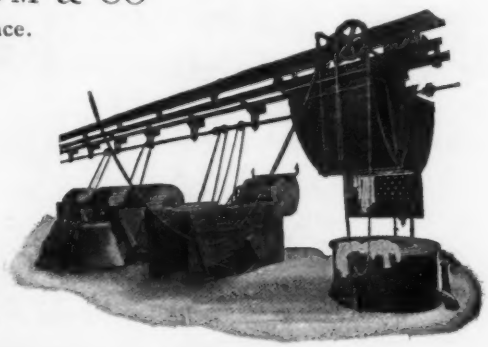
SMITH, DRUM & CO

about it at once.

Full
Particulars
on
Application

CORAL AND CUMBERLAMD STREETS

PHILA., PA.



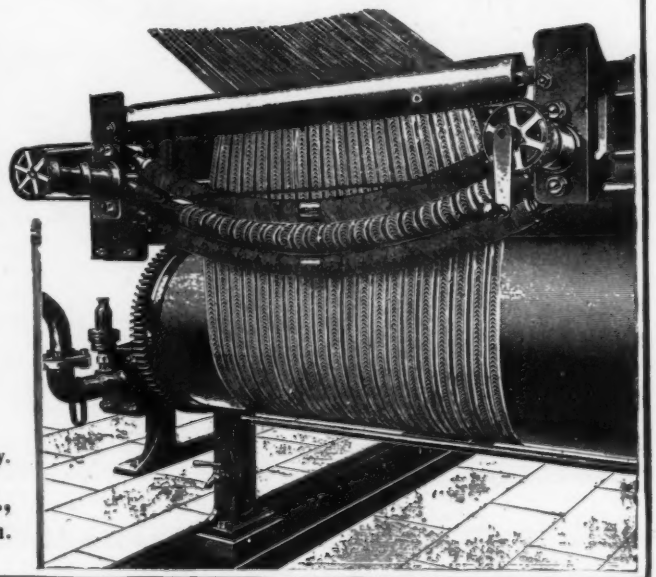
Perfectly Even Tension Both Ways

THIS ideal cloth expander gets the full width of the goods in a most satisfactory way. Can be attached to calenders or cans. Hundreds in use in Great Britain and on the Continent—hundreds more in the United States, with constant satisfaction.

Manufacturers unsolicited say to us, "You have the greatest thing in a spreader ever brought to our attention."

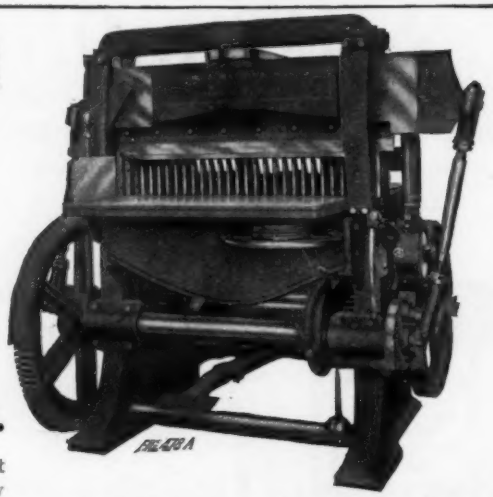
We put them in on trial.
Test it on your own work—'t will pay.

Thomas Leyland & Co.,
60 India St., - - - Boston.



Pinking Cloth and Cutting Samples on Oswego Cutting Machines

is easy, quick, economical and correct.



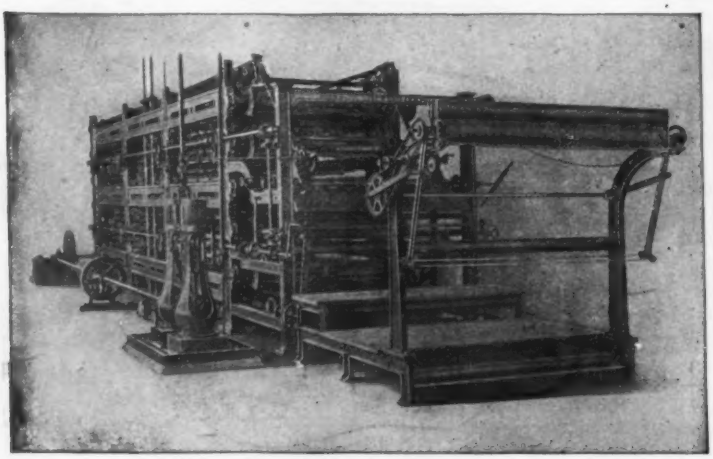
The attractive samples that can be cut on Oswego Cutters bring business. Ninety sizes and styles of Oswego and Brown & Carver Cutters are made. One of these is exactly suited to your present needs. A large number of these machines are in active operation cutting cloth.

Oswego Machine Works, **Oswego, N. Y.**

Niel Gray, Jr., Proprietor.

TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (Double or Single), Dewing Machines, etc. Crabbing Machines for worsted. Made either single, double or triple.

MANUFACTURED BY

D. R. KENYON & SON, Raritan, N. J. Successors to KENYON BROS.

Long Distance Telephone—Somerville 21.

LAWSONS

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery for the Manufacture of Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

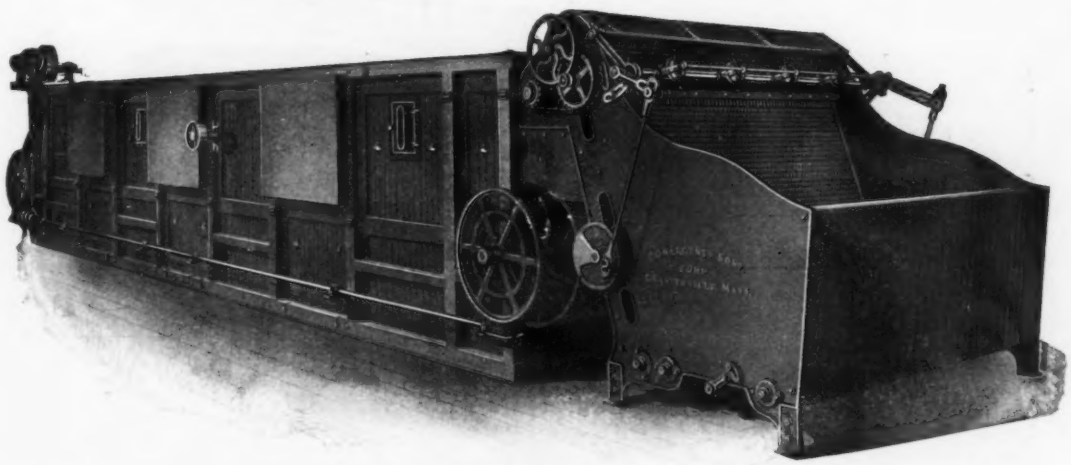
Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

C. G. SARGENT'S SONS

CORPORATION

GRANITEVILLE, MASS.

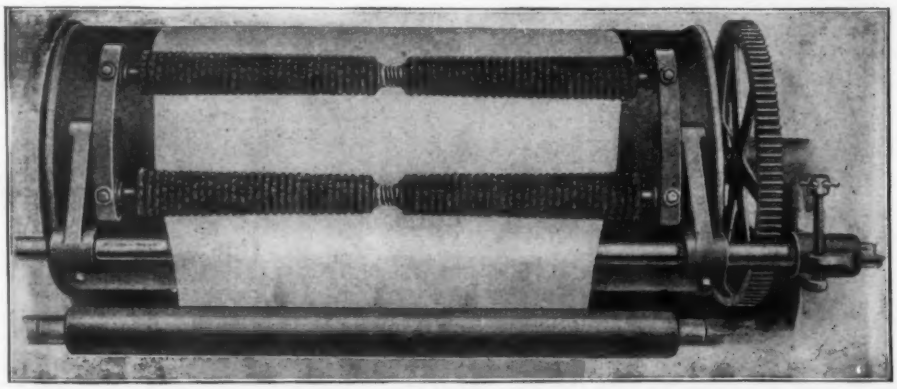


BUILDERS OF

Stock Dryers, Wool Washers, Wool Dusters, Carbonizing Plants, Burr Pickers, Etc.

New Bristle Cloth Stretcher

(Patented)



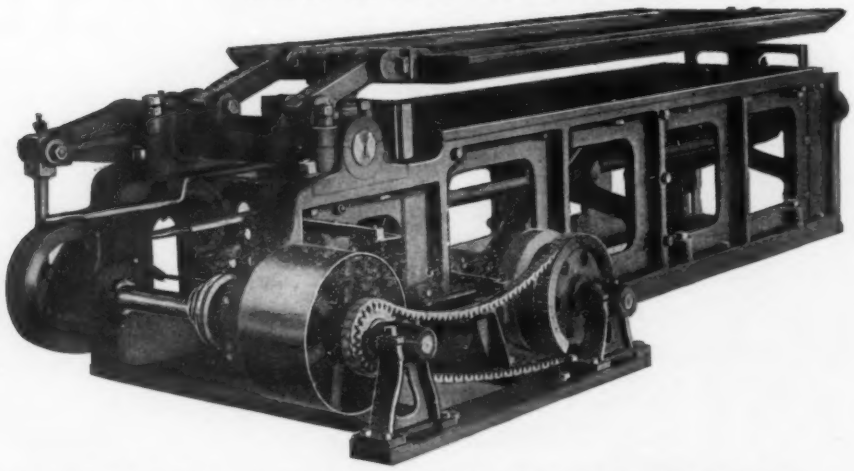
GETS THE FULL WIDTH OF THE GOODS

on all classes of fabrics without disturbing the finish, damaging the warp, bending the weft or distressing the fabrics in any way. Two years' regular work on all kinds of goods in leading mills and finishing establishments in this country and abroad has demonstrated its efficiency. No dirt, grease or oil, no complications in adjusting, no threading up. Made with single and double brush. Sold on approval.

American Finishing Machinery Co., 45 Milk St., Boston
4 Cannon St., Manchester England

Farrel Foundry & Machine Co.

ANSONIA, CONN.



SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Molded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

Get a better finish with fewer runs

TURBO TRADE MARK HUMIDIFIER

Diminish the amount of your "floor sweepings" by 50 per cent. and save a corresponding amount of stock by using

Turbo-Humidifiers
in your
Napper Rooms

They enable you to get results that are impossible of attainment by ordinary methods of humidification. The Turbo-Humidifier is peculiarly adapted for this service as it keeps the humidity at any desired point and has no returns or drains to foul with lint and dust.

Send for our Catalog. It tells more.

The G. M. Parks Co.

Sole Agent **Fitchburg, Mass.**

Cooper Hewitt Electric Lamps

for
Illumination of Industrial Plants of all kinds

New Type P Lamps—Automatic Lighting

These Lamps are particularly adapted to the Lighting of Textile Mills.

The Quality of the Light appeals directly to the operatives—enabling them to increase both the quality and the quantity of their product and at the same time reduces the strain upon the eyes to a minimum.

The efficiency of the Cooper Hewitt Lamps appeals to the management on account of the economy in the cost for current and cost of maintenance.

A proposal showing the light and the economy will be furnished to any Mill or Plant upon request—in writing giving your requirements and lay-out together with the nature and voltage of the electric supply available.

Cooper Hewitt Electric Co.

General Offices and Works:

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POWER TRANSMITTING MACHINERY

RING OILING HANGER
"PHILADELPHIA PATTERN"

Shafting Pulleys
Couplings Fly Wheels
Hangers Gears

Rope Driving a Specialty

Power Plants Designed and Equipped

Prices Right Shipments Prompt
Catalogs for the asking

CAST IRON
SPLIT PULLEY

GEO. V. CRESSON CO.

ENGINEERS FOUNDERS MACHINISTS

(WORKS) PHILADELPHIA, PA. NEW YORK CITY

7 REASONS

Why Woolen Yarn Spinners will find Distilled Wool Grease Oleine the Best and Most Natural Oil to use

N. B. Owing to the present condition of the Olive Oil market, we omit our usual detailed statement of the above **7 Reasons** in order to make a special announcement of our

RECLAIMED OLIVE OIL

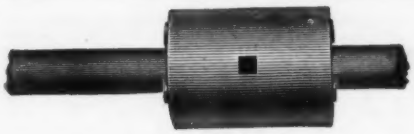
Not an OLEINE, but a pure distilled reclaimed oil, which can be used wherever OLIVE OIL is used.

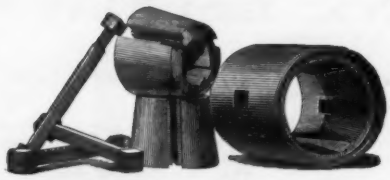
SAMPLES FURNISHED UPON REQUEST.

H. G. McKerrow Co., Ltd., 88 Broad Street, Boston, - Mass.

IMPORTERS OF

Cotton Machinery, Special Wool Oils, Liquid Soluble Soap, Etc.





THE "SELLERS" MAKE OF

DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

PHILADELPHIA, PA.

Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the Transmission of Power.

SEND FOR CATALOGUE AND PRICE LIST.

MACHINE TOOLS.
INJECTORS. POWER CRANES.

Patented in the United States and Foreign Countries.

The American

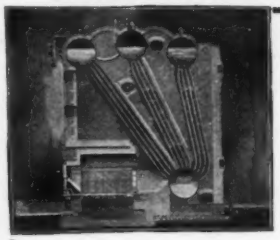
WROUGHT STEEL

PULLEY

Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly—keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.
Sold by the Leading Supply Houses all over the WORLD.

Send for Booklet.

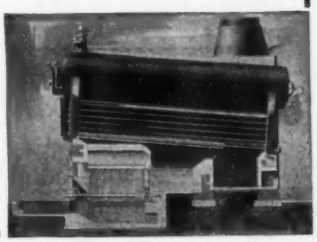
The American Pulley Company
29th and Bristol Sts., Philadelphia, Pa.



The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.



SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

MURPHY IRON WORKS

DETROIT, MICH.

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

Post Office Square Building 79 Milk Street, BOSTON, MASS.

. . . SOLE IMPORTERS OF . . .

ASA LEES & CO., Limited,

TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

SOLE AGENTS FOR

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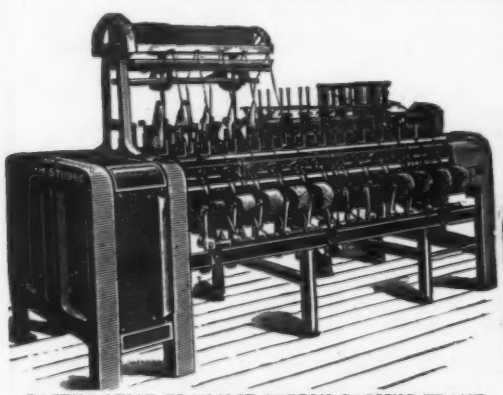
PICK GLASSES, LEATHER APRONS, PATENT WIRE CHAIN APRONS.

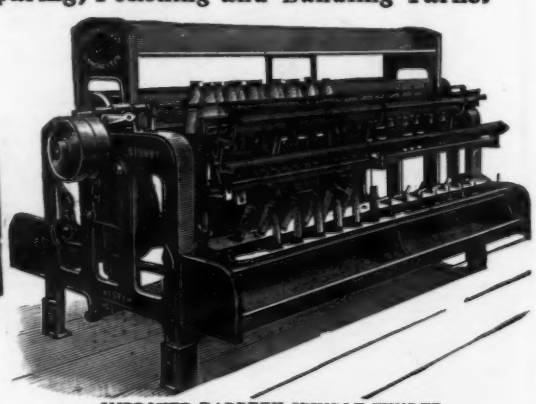
JOSEPH STUBBS - - Manchester, England.

SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

Sole Agents for the United States and Canada.

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DOBBIN'S ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

FREE SAMPLE SENT FOR TRIAL ON REQUEST.

DOBBINS SOAP MANUFACTURING CO., 119 SOUTH FOURTH STREET, PHILADELPHIA, PENN.

The Best That Money Can Buy

IN THE WAY OF

Perfected Modern Machinery Highest Grade Materials
Most Able Management

Cannot possibly yield best results in any textile mill which has not a good supply of

UNIFORMLY PURE SOFT WATER

Eureka Apparatus of 10,700 Gallons Hourly Capacity. Burson Knitting Co., Rockford, Ill.

Bad Water nullifies in discouraging ways the most persistent efforts toward quality and economy of production.

Good Water assists at every point and in every process, removing all uncertainties as to results.

The Dodge Automatic "Eureka" Water Softener and Purifying System

eliminates all bad-water difficulties and provides the essential conditions necessary for highest quality, at lowest cost.

It co-operates with the best of regular mill equipment, the best of materials and the best of operative methods, to the attainment of best productive results.

Then, too, there is the great advantage of having non-incrusting feed water for the boiler plant.

Installations made to suit the conditions of all cases. Each proposition considered individually, and apparatus proportioned accordingly. Results guaranteed. No guess work.

YOU SHOULD READ OUR RED BOOK NO. 414.

Dodge Manufacturing Company
MISHAWAKA, INDIANA

Water Softener Department

The Minterburn Mills Company, Rockville, Conn., Owners
C. R. Makepeace & Co., Providence, R. I., Engineers

The Minterburn Mills Company
Manufacturers of Woolen and Worsted Goods.
ROCKVILLE, CONN.

March 8, 1907.

FRANK B. GILBRETH,
New York.

Dear Sir:

Since you have completed our building for us and a final settlement has been made, we think it only just that we give you some word regarding the way we feel toward you.

We were in a hurry for our building and we therefore demanded a quick job. This you gave us by completing the work in 70 working days.

Your methods have met with our approval and your fairness in settlements of all kinds has been most commendable and unusual.

In short, you gave us what we wanted in the time we had left for completion and in a way which we like.

Yours very truly,
The Minterburn Mills Co.
M. C. MASON, Treas.

This structure was built in severely cold weather in 70 working days, at a cost lower than the lump sum bid for brick and mill construction.

Cost, complete, $0.07 per cubic foot.

We desire an opportunity to show you at what low cost we can erect similar buildings under present conditions.

We solicit contracts in which time is of the essence of the contract.

FRANK B. GILBRETH

GENERAL CONTRACTOR
FOR ARCHITECTURAL AND ENGINEERING CONSTRUCTION

Eastern Office
34 West 26th Street New York

Western Office
St. Clair Building, San Francisco

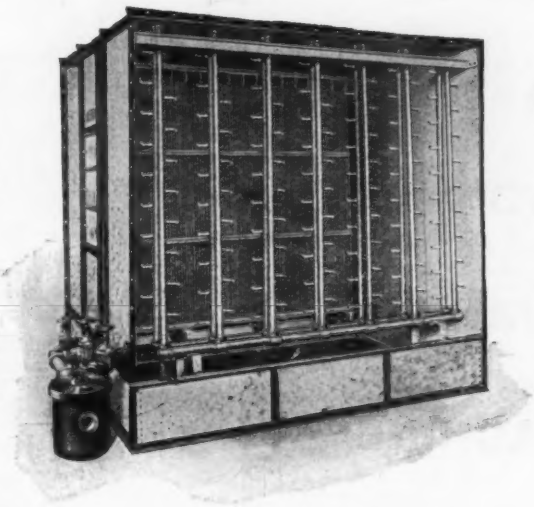
The Carrier System

Air Conditioning

The ideal system combining

Heating
Cooling
Ventilating

Economical, Central. One apparatus for the entire mill.



Humidity Control

Perfect automatic regulation.

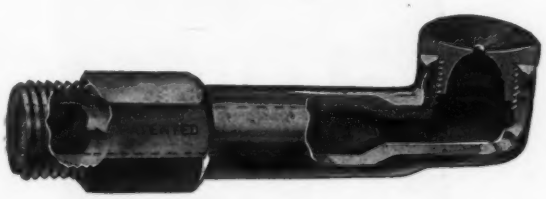
Keeps conditions uniform.

No delicate electrical devices.

Positive and accurate.

View showing Nozzle and Spray Chamber.

Our patents cover a perfectly automatic regulator which may readily be applied to our own or other moistening systems of the "head" or other type already installed.



The Cyclone Nozzle

used in all Carrier Humidifiers gives 100% of cooling and evaporating surface.

Carrier Air Conditioning Co.

39 Cortlandt St., New York.

OF AMERICA

8c

SPINDLES

EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

REPAIRS FOR RABBETH SPINDLES

READ THIS BOOKLET

It explains in a few words why

Shultz Sable

AND

Aqua Waterproof Rawhide Belting

are so much better than ordinary belting. It further backs up our claims to superiority by opinions of representative manufacturers and power plant engineers about Shultz belts, which have been in use from 10 to 25 years.

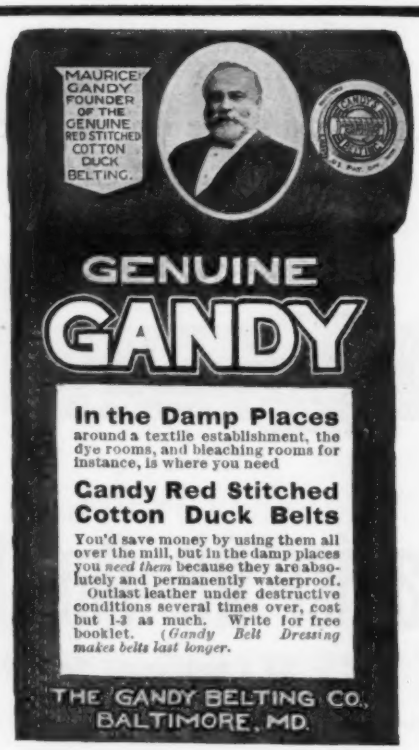
Write for the booklet, or better yet, tell us your requirements and get a trial belt for 60 days free use. If you don't like its performance, you can send the belt back.

Shultz Belting Company

St. Louis, Mo.

New York Boston Philadelphia

No. 34


MAURICE GANDY FOUNDER OF THE GENUINE RED STITCHED COTTON DUCK BELTING.
GENUINE
GANDY
In the Damp Places
around a textile establishment, the dye rooms, and bleaching rooms for instance, is where you need
Candy Red Stitched Cotton Duck Belts
You'd save money by using them all over the mill, but in the damp places you need them because they are absolutely and permanently waterproof.
Outlast leather under destructive conditions several times over, cost but 1-3 as much. Write for free booklet. (Gandy Belt Dressing makes belts last longer.
THE GANDY BELTING CO.
BALTIMORE, MD.

GET A BOX AND TRY IT

Find out for yourself why so many of your friends use ***STEPHENSON*** Dressings.
Two kinds, you know: ***RED Label Brand*** for Leather Belts only, and ***GREEN Label*** for Rubber and Canvas Belts.
And be sure you get the kind that has ***The Man with the Cog-Wheel Face on each Pound Stick.*** No other is Genuine ***STEPHENSON Dressing***.

Price 40 cents per lb. for a 12-lb box
Of Dealers everywhere, or

Stephenson Manufacturing Co., Albany, N.Y.

LUMBER

AT

½ PRICE

USE

AVENARIUS CARBOLINEUM

Wood Preserving Paint on

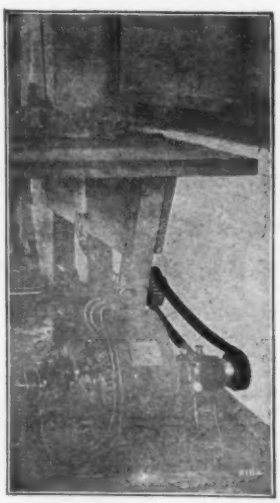
Floors, Sills, Joists, Dye Tanks and Vats

and other woodwork exposed to steam, acids or variations of temperature.

BULLETIN 29 UPON REQUEST.

CARBOLINEUM WOOD PRESERVING CO.

347 West Broadway, New York



Renold Silent Chain

High-Speed Power Transmission:

POSITIVE
QUIET

PROVED
EFFICIENCY
RATED
OVER 98%

Booklet "BB" and Bulletins

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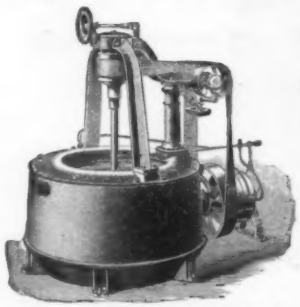
SEATTLE, 440 New York Block

Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs

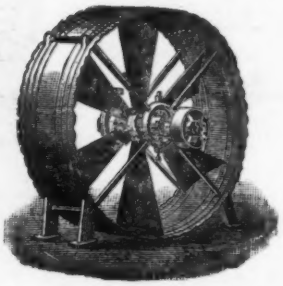


Adjusts itself to an uneven load, runs without vibration
Unusual capacity for high-class work

Bridger Hydraulic Cutting Press

Send for Catalog

Tolhurst Machine Works
Fulton St., and 6th Ave., Troy, N. Y.



Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light

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The "BODDEN" Flyer

For QUALITY OF FINISH
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HAS STOOD THE TEST OF YEARS

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STEEL PULLEYS WILL SOLVE YOUR PULLEY PROBLEM FOR ALL TIME.
NOTICE THE DESIGN AND CONSTRUCTION.

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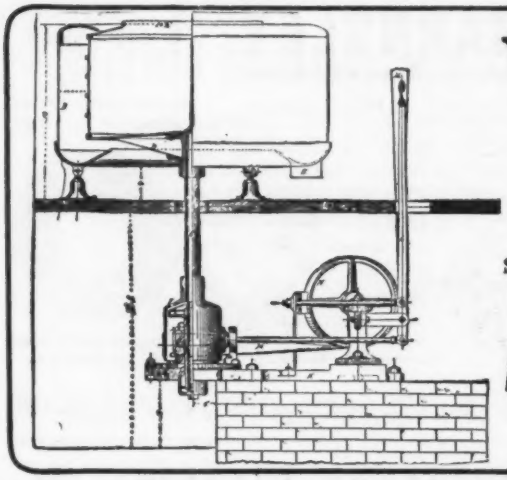

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Special Machines for Acid Work.

SHAFTING, PULLEYS,
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Incorporated 1864. Founded 1845.

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Established 1841

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STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test

Equal, if not Superior, to any in the market.

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It Attracts Universal Attention Because it Is THE BEST

BADGER'S Fire Extinguisher

Has taken the lead in the United States, and is everywhere recognized for its efficiency. After competitive tests, lasting more than one week, THE UNITED STATES GOVERNMENT placed an order for 1,200 of

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Induction Motors

in the mill result in reduced operating and maintenance costs, besides increasing the output and quality of the product. Of the total power supplied through electric motors to textile mills in this country, 75% is delivered by General Electric motors. There's a reason.

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Principal Office: Schenectady, N. Y.

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Absolutely secure combination of Shield and Bobbin guaranteed.

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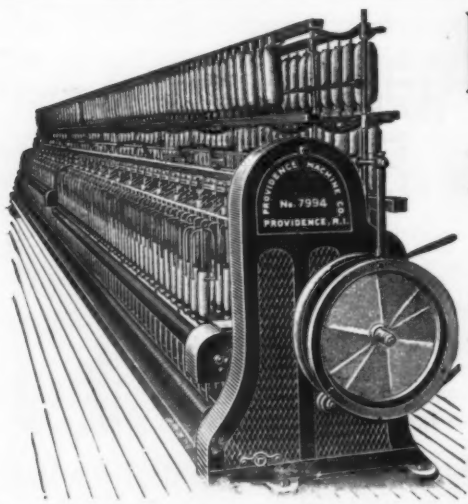

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Improved Worsted Roving Frames

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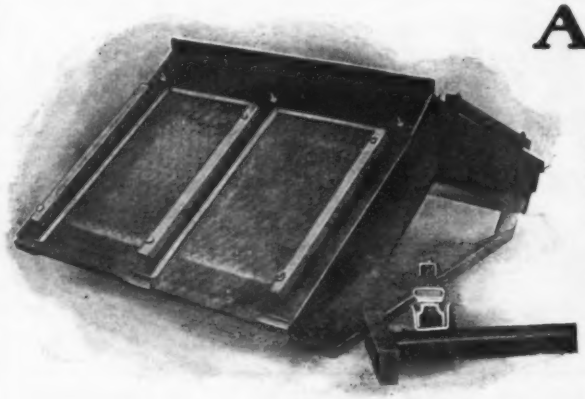

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are easily erected and kept clean. Cost less to maintain than ordinary forms of construction. Anyone can erect. No putty or cement required. Felt rest for glass. Bridge for walking on.

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Get rid of profit wasting fog

A fog filled dye house prevents perfect work or maximum production. Keep the air clear, get rid of the profit wasting fog, improve your product and production by installing

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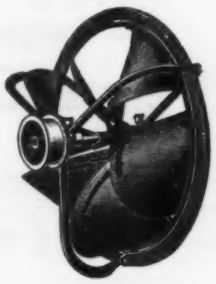
Most efficient and economical for drying.

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



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MEETS EVERY CONDITION

EQUIPPED WITH OPEN DROP WIRES OR CLOSED·
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POSSESSES LARGE RANGE OF ADJUSTMENT.
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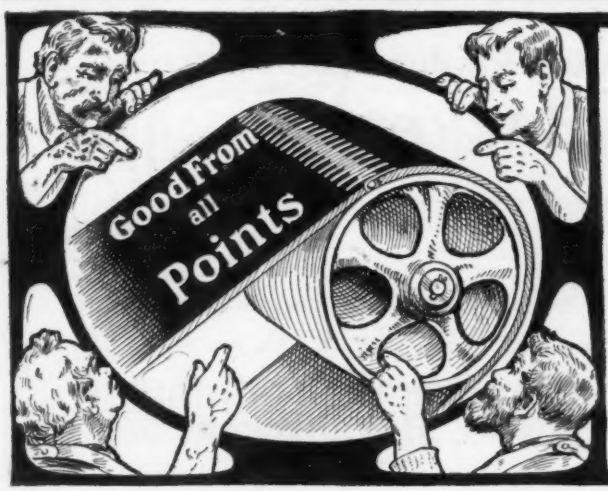

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is just about perfection.

Strong; withstands 1900 pounds strain per inch of lacing.

Durable; the steel wire lacing and rawhide pin will outlast any belt.

Convenient; connected or disconnected in a second by inserting or withdrawing the pin from between the intermeshing coils of steel wire lacing.

ABOVE ALL

Economical; with the JACKSON BELT LACER one man can lace a 5" belt in *three minutes*, the cost for material being *less than one cent.*

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1880—1908

is manufactured at our own works from the finest materials with careful laboratory tests and is guaranteed to do the work for which it was made. That's why the same mills use them year after year. Sold subject to approval and test.

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28-in American Shaper—Belt or Motor Driven

FOR **HIGH CLASS and QUICK**
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IN YOUR OWN PLANT

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are combined the best, extra heavy cotton duck and the springiest, strongest steel obtainable. The rim is protected with heavy, tough leather and the frame is put together with our patent Eye Joint construction.

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Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.

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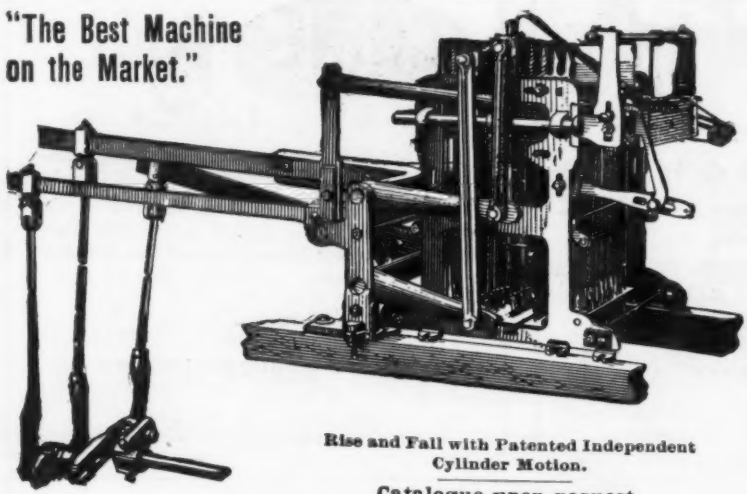

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Bleaching and Napping Machinery

3 Necessities

FOR EVERY

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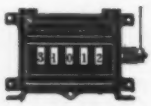
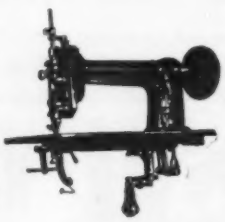


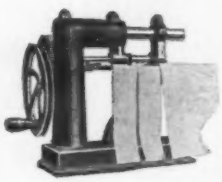
D & H 4207

Counter for registering picks, or production, yards or pieces.

L & E
No. 1--1000

Numbering Machine for numbering and marking piece goods for identification.





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Sample Cutting Machine for pinking samples. The modern time and money saving way.

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Mill Sewing Machines

No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

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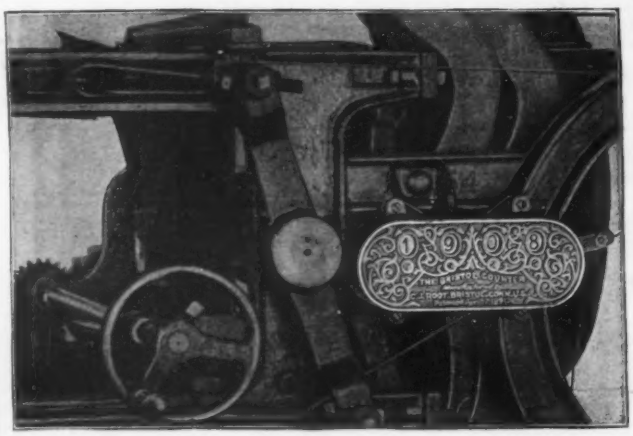

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The illustration shows the Bristol Counter attached to the Crompton & Knowles Towel Loom to count the number of Towels. Different styles can be adapted to count "picks" or yards and for various other requirements. They afford an equitable basis of paying employes. Used by representative cotton mills and bleacheries.

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SPINNING RINGS.
TWISTER RINGS.
RING HOLDERS.
TRAVELER CUPS.
SILK RINGS.
TRAVELER CLEANERS.

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Our splendid facilities guarantee prompt and immediate deliveries. Our equipment, than which no better exists, guarantees the highest grade of all hard wood spools of the highest quality procurable at medium prices.

COTTON WARPER SPOOLS, COTTON TWISTER SPOOLS, WORSTED ROVE SPOOLS, CARPET CREEL SPOOLS, WORSTED REDUCER SPOOLS, WOOL WARP SPOOLS.

We can give one week deliveries on any order of the above kinds of spools.

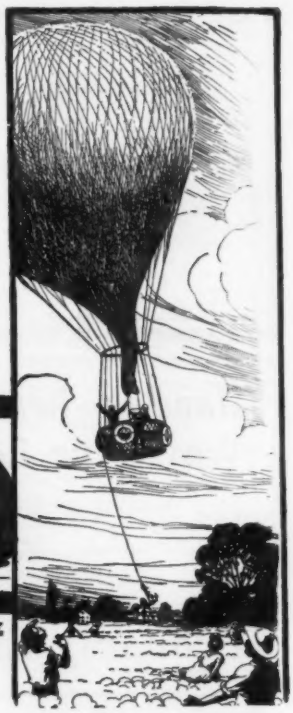
Lestershire Spool & Manufacturing Co.,
LESTERSHIRE, N. Y.

If you are using rope for baling you are helping to pay the gas bill to keep rope prices balloon high.

Rope is up—*Trojan Bale Tie* and *Band* is down.

Trojan Band is made plain or galvanized in coils from 2000 to 3000 feet without a break. Widths ½, ⅝, ¾ and 1 inch.

With the present high prices of rope Trojan Band and Buckle is a **money saver.**



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ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

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AND ALL BRAIDED FABRICS.

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156 Fifth Avenue, New York

15 to 200 H. P.

We are thoroughly familiar with the electric requirements of textile mills.
This is one reason why **C-W** induction motors make good in this field.
Crocker-Wheeler Company, Ampere, N. J.

Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

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will prove the above. Let me have a personal interview.

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DUPLEX PUMPS, SIMPLE PUMPS
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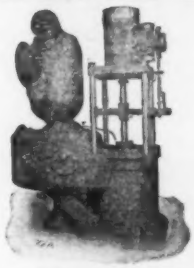
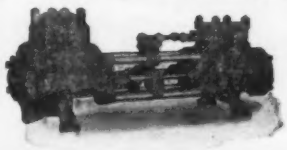
JET AND SURFACE **CONDENSERS** ELECTRIC PUMPS BELTED PUMPS, Etc.



VERTICAL AIR PUMP AND JET CONDENSER



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SIMPLE PUMP

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THE HENDERSON CARD

will increase your carding and improve the quality of your yarn with less waste, greater strength and increased production over any other system.

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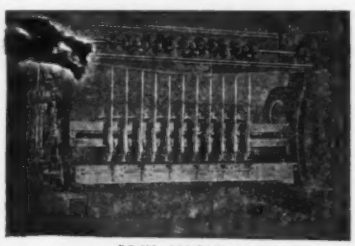
Successors to the Cleveland Machine Works

Owners and manufacturers of the celebrated **Henderson Card** for Wool, Worsted, Cotton, Waste, Flax and Asbestos. Also manufacturers of

All Kinds of Woolen Machinery.



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FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED

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Established 1841

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Built Upright or Horizontal with Low Down Feed

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LOOM PICKER

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Differs from all other Hangers in the market, and is designed and built to furnish perfect lubrication without waste or drip.

WE ARE MANUFACTURERS OF

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A practical test will convince you we can furnish the

BEST
COTTON or WOOL
CARD CLOTHING

Howard Bros. Mfg. Co.

144 and 146 Vine Street, WORCESTER, MASS.

WATER TOWERS
IRON OR STEEL

for Fire Protection and Domestic Service.

Built in all sizes.

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Plans and prices cheerfully given.

Tippett & Wood, Phillipsburg, New Jersey

Competition is keen in the textile field

The manufacturer, to be successful, must take advantage of every modern method that will increase the quantity and improve the quality of his product without increasing its cost. A sure means towards this end, and one easily applied, is Individual Electric Motor Drive. It does not mean remodelling your plant; a wire can be strung anywhere.

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Westinghouse Electric & Mfg. Co.

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Our Latest Improved Steel Power Press with New Steel Link Chains

Minnich Baling Press

for all kinds of products.

Must turn out more bales with less labor and power than any press in the market.

Send for circular.

Minnich Machine Works,

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L. E. Barnes, Pres. and Treas.

The E. E. Burnham Co.

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Manufacturers of

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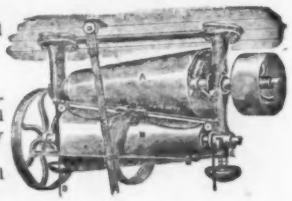
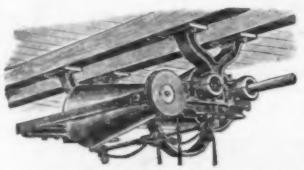
85% Pure Magnesia Steam Pipe and Boiler Covering

Variable Speed Countershafts

The Evans Friction Cone Pulleys



will drive your machines at any desired speed from 1 to 6 by simply pulling a cord.
They are guaranteed to do your work.



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THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

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1866 1908

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. HARTFORD, CONN

41st Annual Statement

January 1, 1908

Capital, $1,000,000.00
Surplus, 1,006,868.06
Reserves, 2,053,326.74
Assets, 4,060,194.80

The HARTFORD was the Pioneer Company in the field of Steam Boiler Insurance, and it is the only company which makes a specialty of and does exclusively a steam boiler inspection and insurance business.

The HARTFORD is the only company whose entire talent and energies are applied to the study of steam, to the scientific construction and installation of boilers, and to their periodical inspection by expert mechanics.

The HARTFORD is the only company whose entire assets and resources are held exclusively for the protection of steam users, and the payment of losses occasioned by the explosion of steam boilers and for no other hazard whatsoever.

The HARTFORD is now doing nearly nine-tenth of the Inspection and Insurance of Steam Boilers in the New England States, and nearly two-thirds of the entire amount done throughout the United States.

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F. B. Allen, Vice-President.
C. S. Blake, Secretary.
L. F. Middlebrook, Assistant Secretary.

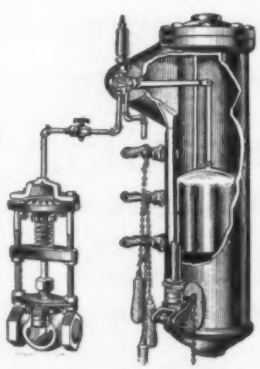
Hartford, Conn.

The

Berry

Safety Automatic Feed Water

Regulator



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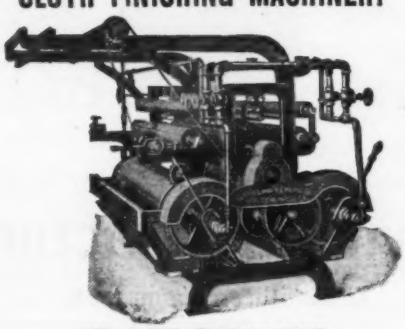

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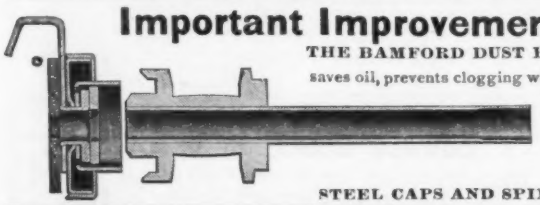

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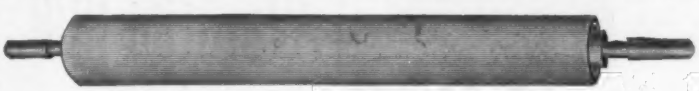

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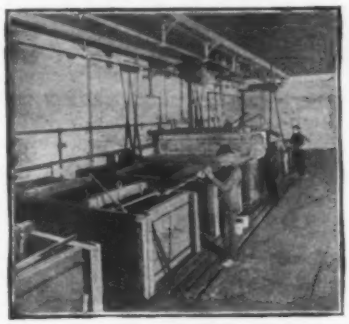

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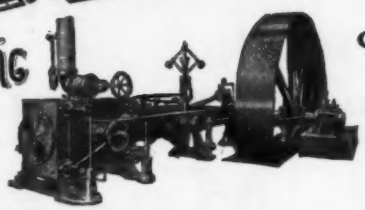

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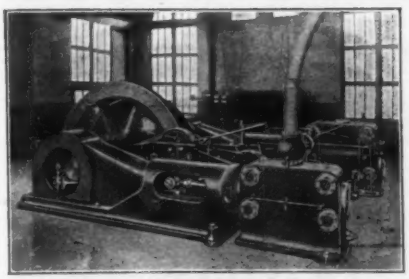

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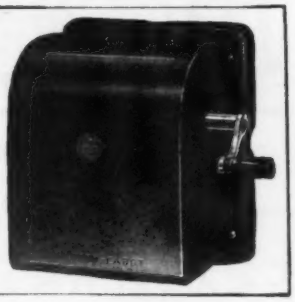

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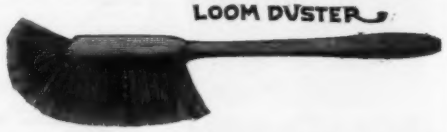

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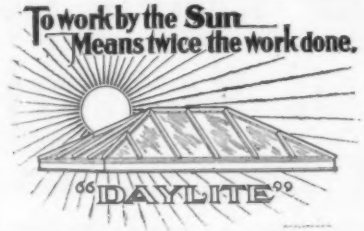

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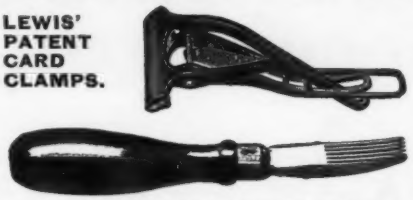

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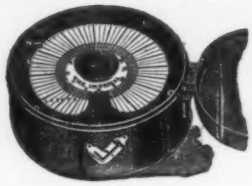

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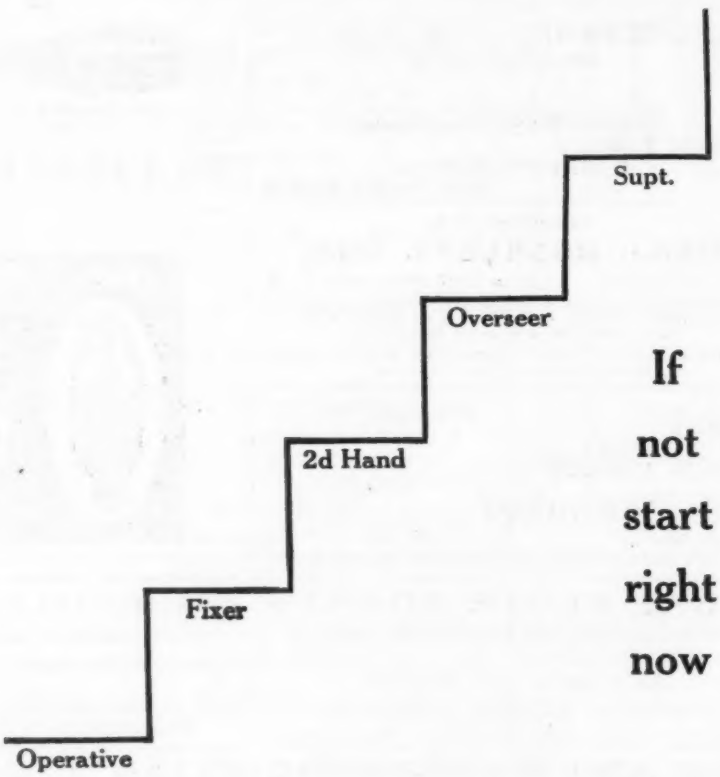

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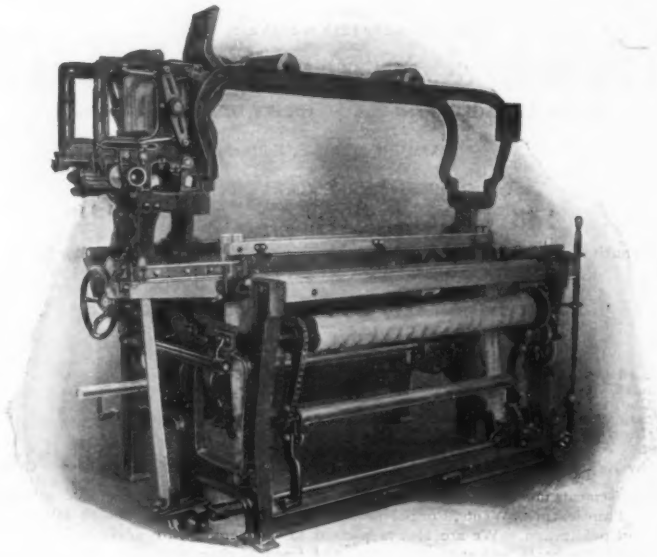

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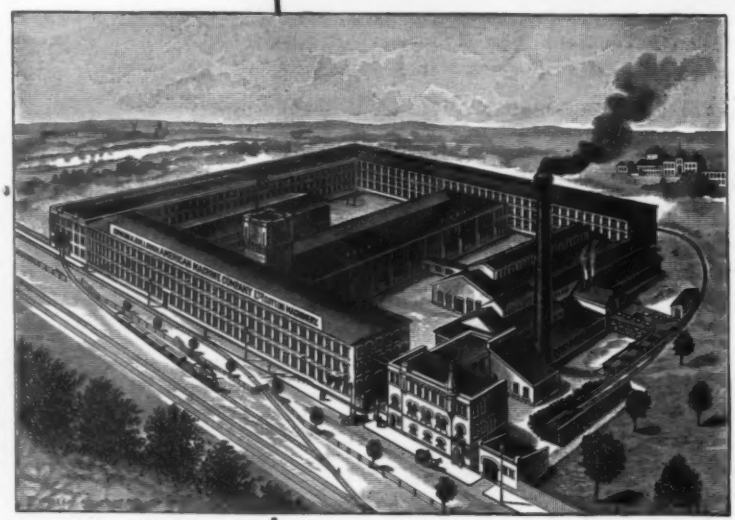

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TEXTILE WORLD RECORD

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The Textile World and Textile Record.

VOL. 36 (NEW SERIES.) November, 1908 No. 2

Monthly Comment.

The Election.

The election of William H. Taft as President and of a Republican House of Representatives means that there will be no violent break in the general policy that with brief interruptions has controlled the government of the United States for nearly fifty years. This assurance will unquestionably tend to allay the uncertainty and distrust that have caused enterprise to halt during the past year. No one can know whether we shall soon see what we all hope for, a return of the great prosperity of recent years, but we are confident the return of that prosperity has been hastened by the results of the election on Nov. 3.

The textile trade has a special interest in the political situation at the present time, because of the pledge made in the Republican platform that the tariff would be revised at a special session of Congress to be called immediately after the inauguration of the President on March 4, 1909. As far as the textile trade is concerned and indeed as far as the American people are concerned the revision of the tariff is the most important political question awaiting solution. And it is of the greatest importance to the textile trade as well as to the people that the question should be settled right. By this we do not mean that the revision must be perfect. No tariff law ever was or will be perfect. By settling the question right we mean a protectionist revision in broad daylight and free from the subterranean influences that have too often influenced former revisions of the schedules.

A protective tariff is essential to the welfare of the American people. It maintains in this country a high standard of living by protecting our people against competition with foreign producers whose only advantage in trade results from low wages. If carried out in accordance with this principle the protective policy needs no excuse. It would be a great mistake, however, for protectionists to ignore the fact that it has not always been so carried out. Too often the legislators, lacking the knowledge, training and energy necessary for determining how the tariff schedules should be adjusted, have allowed such adjustment to be made by representatives of special interests. The result has been to create a public opinion that the tariff is a tax on the many, imposed and maintained for the benefit of a few. Under the pressure of this public opinion the political party that has always stood for protection placed in its platform during the campaign just closed an absurdly impracticable tariff plank, which stated that the tariff rates

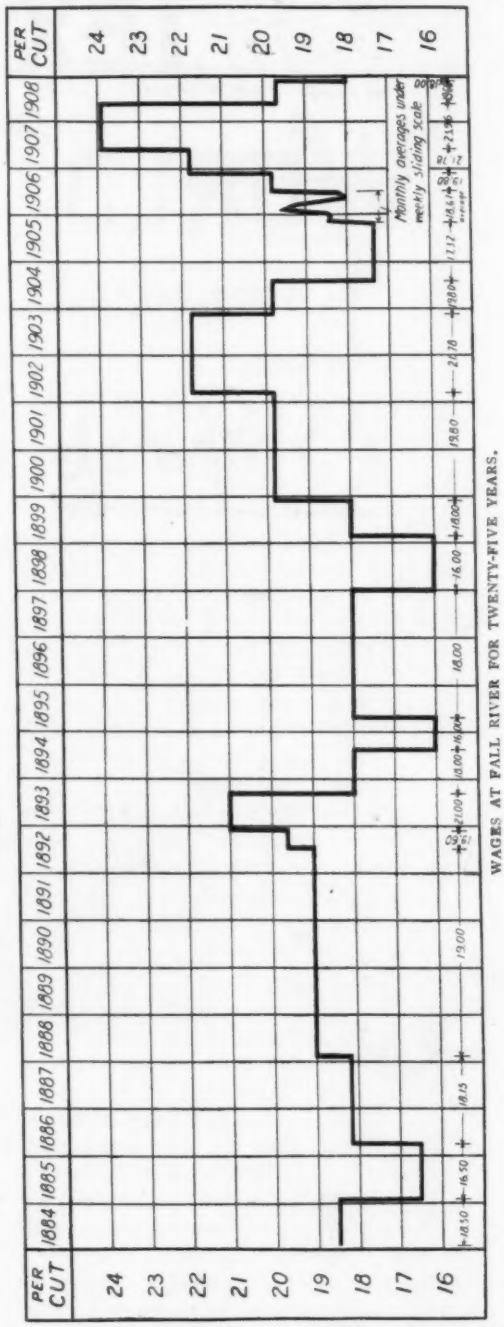
should equal the difference between two quantities, neither of which could be determined, plus a third unknown and unknowable amount.

It is fortunate for the cause of true protection that the impossibility of this scheme of revision has already been demonstrated, long before Congress is called upon to put any plan into effect. And we take a certain satisfaction in the knowledge that the proof of the impracticability of the Republican tariff plank of 1908 appeared first in this country in the October, 1908, issue of the Textile World Record.

The Congress and the President that were misled into the acceptance of that tariff plank can now return to the fundamental principles of protection and by a wise, careful, conservative and public investigation and revision of the Dingley tariff, provide the American people with a secure foundation for enduring prosperity. And the party that has once more gone down to defeat can find a foundation for future victory by a recognition of the fact that the American people believe in a protective tariff and that no political party can hope for permanent success which does not support the principle of tariff protection.

Another Reduction of Wages at Fall River.

In connection with the coming reduction of 8.44 per cent. in wages in the cotton mills at Fall River from 19.66 to 18 cents a cut there is the melancholy satisfaction that under the sliding scale no further reduction can occur. It was provided in that agreement that the rate should not exceed 23.96 nor go below 18 cents. It has now reached both extremes. The maximum, 23.96, corresponds to a margin of 115 points and above; the minimum, 18 cents, to a margin of 72 1/2 points and below. For five months of the current six months the margin has averaged 58.59 points. There is practically no chance of the remaining month bringing the margin up to affect the rate of wages for the succeeding six months, and this rate must, therefore, be fixed at 18 cents. The accompanying chart shows the course of wages at Fall River for the past twenty-five years. During that period the rate has dropped below 18 cents



WAGES AT FALL RIVER FOR TWENTY-FIVE YEARS.

at four different times, in 1885, 1894, 1898 and 1904, the time during which rates below

the minimum prevailed aggregating about four and one-third years. This along with the fact that the existing margin is considerably below the minimum rate line makes plain the value of the minimum clause in the existing agreement. There is an incidental advantage to the sliding scale agreement which should not be overlooked. This agreement and the fluctuations of wages under it are teaching the army of operatives and employers the close connection between wages and the market prices of raw and manufactured products. They are all learning as never before that high wages are impossible unless there is a margin to pay for it. This demonstration has its obvious corollary, that anything which tends to depress the price of the manufactured product, such as imports of foreign goods, will surely cause a reduction of wages. This is especially true in the American cotton trade, because the price of raw cotton, on which the margin also depends, is not influenced by the imports or exports of cotton goods. The manufacturers both at home and abroad must have American cotton. If the foreigner makes the goods we will sell him the cotton; if we make our own goods we will use the cotton ourselves.

The Cost of Wool Goods at Huddersfield, Eng.

Through the courtesy of the Department of Manufactures at Washington we are able to place before our readers a report by Special Agent W. A. Graham Clark on the cost of manufacturing wool goods at Huddersfield, England. The high character of Mr. Clark's work in investigating industrial conditions in foreign countries during the past two years warrants the acceptance of his report on foreign costs with a considerable degree of confidence. He has necessarily been compelled to rely on others for the data, and the fact that the source of the information has Mr. Clark's approval makes the report worthy of confidence. It is also of interest as the first of the government reports on foreign cost to be made public.

The Lockout in Lancashire.

The lockout or strike, whichever it may be, drags on in the cotton mills of Lancashire with no signs of the end although the test of endurance has lasted for nearly seven weeks. Nominally the trouble was caused by the refusal of the card room unions to consent to a 5 per cent. reduction of wages. The real cause is not so clear. One significant phase of the affair is the readiness with which the employers met the issue and the stubborness with which they refuse all overtures for a compromise. This policy is but natural in the light of events for the past four years. In 1904 the cotton employers of Lancashire were forced by the shortage of cotton to run their mills on short time for many months. Since that time the mills have enjoyed a record breaking period of prosperity, the annual profits of many of them reaching as high as 60 per cent. of the capital stock.

This sequence of enforced short time in 1904 and four years of phenomenal prosperity has convinced the great majority of English cotton spinners and manufacturers that a cure for all their industrial ills is to be found in running their mills on short time or stopping them entirely for a season. Is the price of cotton too high in their opinion? Run on short time. Is the price of yarn or of cloth too low? Short time. Do the operatives demand higher wages than the employers consider fair? Short time. The efficacy of short time under these various conditions has always been vaguely recognized, but the events of the past four years to which we have referred have changed a vague idea into enthusiastic conviction on the part of the Lancashire cotton trade. That explains the unyielding attitude of the Lancashire cotton employers in the present contest. Trade has fallen off; the price of cotton has been too high to suit them; the operatives refuse to consent to a reduction in their wages. Here is a conjuncture of the three conditions that the employers believe call for short time. And so they have entered the contest and are obstinately continuing it with the utmost confidence that the

result will be another period of wide margins resulting from higher prices for yarn and cloth, and lower prices for cotton and labor. Whether they are right or not is immaterial in the present contest; the important thing is that they think they are right.

At present there is only one disturbing indication. The foreign manufacturers competing with English mills are taking advantage of the deadlock in Lancashire to push their goods into markets heretofore dominated by the British exporters. Continental and Asiatic mills with their cheap labor have the best chance, but even with our high priced labor American mills may accomplish something in this direction. Our chief interest in the Lancashire lockout, however, is in the effect it will have on the price of American cotton. The prolonged idleness of 40,000,000 cotton spindles cannot fail to have a marked effect in depressing the price of the raw material and it is for this reason that an early termination of the struggle should be welcomed in the United States. We have too much cotton for sale to foreign countries, especially at this time of the year, to enjoy seeing its selling value depressed. It is the idle operatives, however, who suffer the most. It is estimated that the weekly loss of wages in the idle mills amounts to $600,000. To this must be added the heavy shrinkage in wages in allied and dependent trades. The situation is the more serious because of the depression in all branches of business in the United Kingdom. Already relieving the destitution among the poor and unemployed is proving a serious burden on public and private charity. With business depressed and winter near at hand, the English cotton operatives have reason to say with Burns:

> But, Och! I backward cast my e'e,
> On prospects drear.
> An' forward, tho' I canna see,
> I guess and fear.

The struggle in Lancashire is between the most highly developed organization of employers and operatives to be found anywhere. But it is the operatives, many of them women, who during this ordeal are exhibiting a discipline and uncomplaining fortitude deserving of the greatest admiration. In seven weeks they have sacrificed wages equal to the 5 per cent. difference for more than three years, and they have done this because of their devotion to a principle, that of organization, and with the conviction that they cannot get concessions except by fighting for them, sometimes without hope of immediate returns. Whatever opinions of the merits of the question may be held all must agree that the cotton operatives of Lancashire are exhibiting courage, loyalty and uncomplaining endurance to a remarkable degree. May their reward take the form not alone of a greater reluctance on the part of their employers to precipitate such struggles in the future, but of some efficient plan for the automatic regulation of wages, in the adoption of which Fall River has led the way.

A Uniform Bill of Lading.

The abuses in connection with the shipment of goods by rail under the existing form of bills of lading have been frequently referred to in these columns. As a result of the agitation for a reform of the evils the transportation companies have agreed to adopt a new bill of lading, following being the official notice of the change, which is of especial interest to textile manufacturers:

NEW FORM OF UNIFORM BILLS OF LADING.

Upon the recommendation of the Interstate Commerce Commission, which was made after public hearing upon the matter, at which all interests were afforded an opportunity to be heard, the carriers will, on Nov. 1, 1908, adopt a new Uniform Bill of Lading combined with a new Shipping Order. This combined Uniform Bill of Lading and Shipping Order was prepared by a representative committee of shippers and carriers after many conferences with banking and other interests.

On and after Nov. 1, 1908, the shipper may have the option of shipping property either subject to the terms and conditions of the Uniform Bill of Lading, or under the liability imposed upon common carriers by the common law and the federal and state statutes applicable thereto—i. e., if the shipper elects to ship under the terms and conditions of the Uniform Bill of Lading and Shipping Order, the rates provided in the Official Classification and tariffs will apply. If the shipper elects not to accept the conditions of the new Uniform Bill of Lading and Shipping Order, the property so carried will be at carrier's liability, limited only

as provided by common law and by the laws of the United States and of the several states in so far as they apply, but subject to the terms and conditions of the Uniform Bill of Lading in so far as they are not inconsistent with such common carrier's liability, and the charge therefor will be 10 per cent. higher (subject to a minimum increase of one cent per 100 pounds), than the rate charged for property shipped subject to all the terms and conditions of the Uniform Bill of Lading and Shipping Order.

The combined Uniform Bill of Lading and Shipping Order may be briefly described as follows:

"1st. One form for use in connection with what are termed 'straight' consignments, consisting of the Bill of Lading, Shipping Order and Memorandum Acknowledgment (all to be printed on white paper).

"2d. One form for 'order' shipments, consisting of the 'order' Uniform Bill of Lading (to be printed only on yellow paper), and the Shipping Order and Memorandum Acknowledgment (to be printed on blue paper). This form shall be used only for order consignments; it will not be permissible to accept order-notify shipments on straight bills of lading.

"A supply of standard railroad forms will be furnished shippers upon request. Shippers, for their own convenience, may print on these forms lists of commodities, at their own expense.

"Forms of bills of lading prepared by shippers for use on and after Nov. 1, 1908, must contain the precise language of the new contract and conditions, and must conform to the requirements in respect to color distinction for 'order' shipments and 'straight' consignments.

"It is appreciated that in order to meet particular requirements or conveniences of business, certain exceptions in non-essential features from carriers' forms may be necessary in the shippers' forms. These exceptions should, however, be approved by carriers before being adopted. Under no circumstances can any variation be made in the essential requirements, such as the title of the respective bills of lading, the color to govern each, the provision for shipper's signature and the precise language and arrangement of the contract and conditions.

"As leading up to this action of the carriers, it is proper to say that in 1904 the carriers undertook to adopt what was termed a 'uniform bill of lading.' Certain commercial bodies entered formal complaint before the Interstate Commerce Commission, resulting in a hearing before the Commission, at which the representatives of those bodies and of the carriers in Official Classification territory appeared. At this time the Commission stated the subject seemed to be one for agreement between the carriers and the shipping interests. A committee was appointed to represent the roads in Official Classification territory, and another committee to represent the shipping interests, for the purpose of considering and agreeing upon a form of uniform bill of lading. Since which time down almost to the date of the issue of Report No. 787 of the Interstate Commerce Commission in the matter of bills of lading (June 27, 1908), there have been conferences between the committees, between the Commission and the committees and between the committees and banking interests, who subsequently entered into this question as having a vital interest therein, all with a view of reducing differences to a minimum and securing the widest possible assent to a bill of lading that the Commission might approve.

"In October, 1907, the Commission held a public hearing, at which all interests were given an opportunity to be heard. The result of these labors is the Uniform Bill of Lading in two forms —one a 'straight' uniform bill of lading, not negotiable, the other an 'order' uniform bill of lading— approved by the Interstate Commerce Commission in their Report No. 787, June 27, 1908.

"The division into two forms, one of which is white and the other in colors, yellow and blue, was adopted to meet the unanimous belief that the 'order' uniform bill of lading should be of a distinctive character in order, so far as possible, to prevent fraudulent changes being made after the uniform bill of lading is issued, and it was urged by both the shipping public and the bankers as a necessary safeguard to their commercial transactions, it being recognized that a 'straight' uniform bill of lading without any distinctive features could be fraudulently manipulated.

"It is the belief this uniform bill of lading, the result of three years of arduous negotiation between the shipping interests and the carriers, with the benefit of advice from learned counsel and the banking interests of the country, who are vitally interested in the negotiability of the uniform bill of lading, has resulted in a document which, as to its form, is so nearly perfect as to commend itself to every shipper.

"The great importance of uniformity has been recognized throughout the period during which the uniform bill of lading has been under consideration, and by all the parties interested. It has been urged by the shippers, the bankers and the Interstate Commerce Commission.

"The Interstate Commerce Commission, as to the new Uniform Bill of Lading, says:

" 'Its adoption we are persuaded will be a long step towards uniformity, simplicity and certainty. It will likewise be a long step in the direction of fair dealing between shipper and carrier, and it may be confidently expected to remove much of the confusion which now exists, and to measurably avoid in the future the irregularities and injustice which have heretofore occurred.' "

The Invisible Supply and Consumption of Cotton.

The census of cotton consumption and invisible supply on Aug. 31, 1908, issued last month by the International Cotton Federation includes 111,217,883 spindles out of an estimated total of 128,923,659 for the world. Thanks to the cooperation of our Census Bureau the returns for the United States are complete, the 18,000,000 missing spindles be-

ing located in foreign countries, principally in Great Britain, Russia and India. In summarizing these reports for the readers of the Textile World Record we have for a number of years given an estimate of the time the reported stocks of cotton would last the mills at the rate of consumption for the preceding year. We are gratified by the compliment paid to this feature of our report by its incorporation in the international census just issued. Following are summaries of the census since it was started three years ago:

MILL STOCKS OUTSIDE OF THE UNITED STATES

Date	Spindles	Bales on hand	Bales used per week	Stocks will last
Aug. 31, '05	46,726,929	935,237	103,269	9 weeks.
Feb. 28, '06	54,297,537	1,237,180		
Aug. 31, '06	66,072,303	1,210,610	145,603	8.3 weeks.
Feb. 28, '07	71,054,503	1,911,071		
Aug. 31, '07	74,279,078	2,368,410	190,811	12.4 weeks.
Mar. 1, '08	78,984,106	2,342,127		
Aug. 31, '08	83,371,883	2,132,045	215,472	9.9 weeks.

STOCKS AT AMERICAN MILLS.

Date	Total Spindle	Bales on hand	Bales used per week	Stocks will last
Aug. 31, '05	23,687,495	776,801	82,288	9.4 weeks.
Aug. 31, '06	25,250,096	688,312	94,413	7.3 weeks.
Aug. 31, '07	26,242,000	996,000	95,904	10.4 weeks.
Mar. 1, '08 est.	27,000,000	1,089,119		
Aug. 31, '08	27,846,000	596,000	87,981	6.4 weeks.

The German Agreement.

A letter to the President of the United States, written by the president of the Melbourne Knitting Mills, Philadelphia, Pa., was recently made public, and from it we take the following extracts:

To the President, Washington, D. C.

Mr. President: The present German agreement enables the German hosiery manufacturers to market their hose in this country at a figure which we cannot possibly touch, if we hold for a fair, reasonable return upon our investments and a just compensation for our time and labor. The present working result of this low tariff German agreement upon our industry has been an almost complete cessation of business in our line; the stopping of a very large percentage of hosiery machinery in America; a complete closing down of some mills, and the throwing out of employment of thousands of men, women, girls, and boys from Maine to Florida and from New York to San Francisco, while the German manufacturers have flooded our country with their foreign wares. American money, which, by all right of reason, justice, and precedent, should be earned by the American manufacturer and provide a means of honest livelihood for the American laborer, now passes, by virtue of the German agreement, into the possession of the German manufacturers, and deprives thousands upon thousands of our hosiery workers of the power to earn their daily bread.

We cannot give you a more striking or forceful illustration of these facts than our own experience in one direction. For two years, and until last January, we made a certain style of hose for which we found, without difficulty, a ready market at remunerative prices. One particular purchaser used our goods in large quantities, making the account a desirable and profitable one. Without, apparently to us, any cause, his orders suddenly ceased, and after a lapse of several weeks he wrote us, asking for quotations on spring deliveries, meaning last spring. Fearing competition we named him a price 5 cents per dozen below the figure at which we had been shipping him. His spring order was not placed with us, and upon inquiry we learned that he had bought the imported German hose at a figure actually below our quotation, and that said German price was made possible by the low invoiced valuation under the working of the German agreement. As a consequence of the loss of this customer and one or two others of a like nature we were compelled to shut down one hundred of our machines on this particular style and take work from the different departments of our mill that would have given employment, emolument, and comfort to many willing workers, not to mention the money actually lost to the American stockholders of our enterprise.

If it was your intention to sacrifice the hosiery manufacturer for the benefit of the hosiery consumer in this country, by reducing the cost to the retailer and thus to the consumer, you have failed of your purpose, for the retail selling price is no lower today than before the signing of the German agreement; but you have, unwittingly, by the agreement, enriched the German manufacturer and given employment and wages to the German workmen at the expense of the American manufacturer and the American laborer. We do not believe that this was your intention, but it is the manner in which the agreement has worked out. If you can find a means to repeal or annul it you will confer a lasting benefit upon a large and growing American industry—hosiery manufacture.

Very truly yours,

H. E. Ashmore, President.

The only trouble with this letter is that it was not written a year ago and signed by representatives of the entire textile industry of the United States. It was apparent then that the effect of the German agreement would be what it has been and is. The politicians at Washington would do nothing then because no adequate pressure was applied by their constituents. If the textile manufacturers had been alive to the danger and united promptly in a protest against the agreement, Congress and the President would have been brought to their knees.

Now that the trade is feeling the pinch of

the agreement the necessary protest may be made this winter. Whether it is or not we have the satisfaction of knowing that the Textile World Record did its duty in sounding the alarm long before the agreement was signed. Our tabulated "Account with Germany," published in January, 1907, our letter to the Chief of the Bureau of Manufactures, suggesting an investigation of German industrial conditions and which resulted in the report on "Dress Goods Dumped on the American Market," published in March, 1908, our reply of July 25, 1907, to S. N. D. North, chairman of the German tariff commission, these and numerous editorials relieve us from any responsibility for the failure to force the authorities at Washington to abrogate the German agreement. Better late than never, however, and we urge textile manufacturers and textile operatives to make the necessary representations to Congress and the President without unnecessary delay.

Protection in Canada.

The need of a protective tariff for the Canadian textile industry was the subject of a stirring address by Louis Simpson, of Valleyfield, Quebec, at the Montreal meeting of the Canadian Manufacturers' Association, and from which we take the following extracts:

It has been stated by Prof. Goldwin Smith and people of his class that every cent of protection which is levied in this country comes out of the pockets of the farmer. I want to deny that most emphatically. (Hear, hear.) I mean to say that it might be true if there were no manufacturers here, but as long as we manufacture in Canada we prevent the merchant from making the consumer pay all the duties. I mean to say this, that, under present conditions, if there were no manufacturers of textile goods in Canada, the consumers would be paying a great deal more for their supplies than they are today; and it is the manufacturers who prevent the merchants from realizing for themselves big profits; it is the manufacturers who are enabling the consumers to buy good, well-made, pure goods at a reasonable price; and if it were possible for the manufacturers to be all wiped out of Canada tomorrow, the consumer would have to pay a great deal more for goods than he does today. Gentlemen, we want to get closer to the farmer; we want to let the farmer know these truths. Manufacturers have been maligned too long, and I think our organ should be so directed that these truths can be placed before the farmer; let them understand the interests of the farmer and the manufacturer are the same; let us combine as against the working classes, who, by the help of unions, have been trying to raise the price of unskilled and half-skilled labor.

Mr. Simpson made further reference to the tariff question in his comment on the president's address:

One point I am very glad you spoke strongly upon was the present deplorable condition of the woolen trade. As the woolen trade is today, the cotton trade may be tomorrow, and I think everybody interested in Canada, in textile trades, should consider your remarks very earnestly. When we had a protection without a preference to England it was possible for the textile trades of this country to do a business that was satisfactory to everybody concerned; but, with the present preference which our Government has allowed to these manufactories, when the trade is bad in England it is utterly impossible for Canadian manufacturers to pay the enormous increase that they are paying over the English price of labor, and to conduct their business at a profit or even at a small loss, and I think it is necessary that the Government and everybody in Canada should properly realize the position. It has been suggested that the Government be requested to send to England a commission of experts to enquire into the difference in cost of manufacture in England, as compared with Canada, in the textile trade. Such a commission, if properly filled, would be, I think, of great use; but a commission that was composed of party heelers, of out-of-place politicians, or even ministers who had some preconceived ideas upon the question, and who would, if they reported fairly, have to admit that they had done wrong in the past, I do not think would be of any use; but if it were possible for the Government to send to England and to Germany a commission of experts, I think they would then find this, that the present protection given to textile goods against the Canadian manufacturers does not cover even the increased cost of the wages which we manufacturers in Canada have to pay to our help. Then, further, they would find that, under ordinary circumstances—that is, when the trade is in its ordinary condition, or when it is in a bad condition—that the buyers of Canada will not pay the Canadian manufacturers the price, being the cost of the goods in England, plus transportation and duty. I have it before me every day of the week, where they expect to get the Canadian-made goods, although fully equal in quality to the goods made in England, at a quarter, at a half, at three-quarters of a cent less per yard; and, further than that, Canadian buyers will not respect their contracts when placed with Canadian firms, although they have to respect those contracts when placed with English firms; and this in itself is a great burden upon the manufacturers.

The value of the exports of wool from New Zealand is estimated at 20 million dollars annually.

Cost of Wool Goods at Huddersfield, England

A Report by W. A. Graham Clark, U. S. Special Agent.

Accompanying this report are eight samples of wool goods representing the fabrics made at Huddersfield, England. The layout and estimate of cost are given for each fabric, the estimate being made in each case for 1,056 yards of cloth. Samples 1 to 6 are worsted goods and the cost estimates are based on the manufacture in a mill buying the worsted yarn, as is the custom in this district. Nos. 7 and 8 are carded woolen goods and as such fabrics are manufactured in one mill from the wool or shoddy, the estimates of cost cover all operations from the loose, raw material to the finished goods. The yarn counts for worsted, cotton and spun silk are the same as those used in the United States. (The Huddersfield count for woolen yarn has been reduced to the run basis.)

The weights of the material as given include an allowance for waste in the various processes. The cost of manufacturing the cloth is apportioned to the various departments of the mill as follows:

Office expenses include beside the regular office expense, differences in discount given and received and in terms of payment given and received.

The warehouse item includes warehouse expenses, packing material, traveling and selling expense, commission for selling, and all other expenses in the shipping and marketing of cloth.

Patterns include cost of getting out styles, travelers' lengths, also salaries of designers.

Weaving includes warping, beaming and putting up, as well as weavers' wages and all other expenses of this department.

Mending includes knotting and burling.

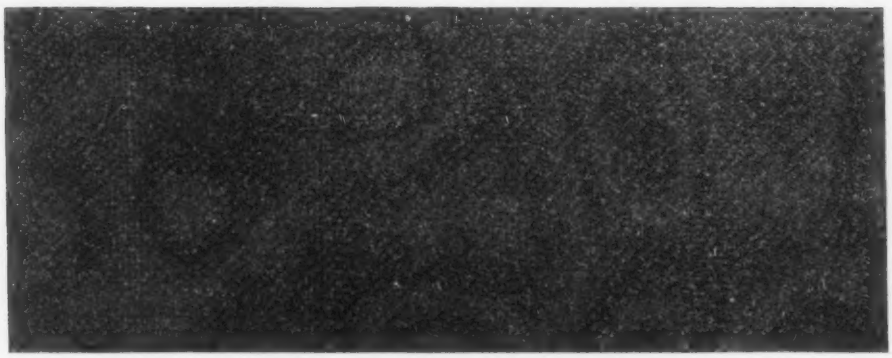
Finishing includes all the processes neces-

No. 1.—Fancy Worsted Suiting.

1056 yards, high grade; Weight per sq. yd. 13.6 ozs.; Thread per inch in Warp 42, Filling 40; Grade, Botany No. 70 @ 74c; Yarn, 1530 lbs. 2/16s.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	1,132.20	..	..	..	..	..	..	..	..	$1,132.20
Office Expense	..	..	..	.34	.16	..	.12	..	20.18	20.80
Discounts, Terms, etc	..	30.60	..	..	..	..	..	..	..	30.60
Warehouse	..	..	..	2.96	1.64	..	1.48	2.96	20.56	29.60
Patterns	..	..	..	.24	.24	..	1.16	26.88	5.08	33.60
Weaving	..	11.70	3.12	4.56	4.70	3.92	1.30	82.64	18.94	130.88
Mending	..	..	..	1.20	1.20	..	..	21.60	..	24.00
Finishing and Dyeing	..	10.08	1.78	5.98	4.98	10.36	12.60	48.60	2.10	96.48
Total	1,132.20	52.38	4.90	15.28	12.92	14.28	16.66	182.68	66.86	$1,498.16

Cost per yard, 58-in., $1.419.



No 2.—Fancy Worsted Suiting.

1056 yards, medium quality; Weight per sq. yd. 11.8 ozs.; Threads per inch in Warp 45, Filling 48; Grade, Dark Grey Botany No. 64 @ 66c., No. 64 @ 74c; Yarn, 1370 lbs. 2/20s.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	908.20	..	..	..	..	..	..	..	..	$908.20
Office Expense	..	..	.36	.18	.18	..	.12	20.82	.12	21.60
Discounts, Terms, etc.	..	27.40	..	..	..	..	..	..	..	27.40
Warehouse	..	..	..	3.12	1.72	..	1.56	3.12	21.68	31.20
Patterns	..	..	..	.16	.06	..	.72	16.58	3.28	20.80
Weaving	..	12.36	3.30	4.80	4.94	4.12	1.38	86.40	19.90	137.20
Mending	..	..	..	1.20	1.20	..	..	21.60	..	24.00
Finishing and Dyeing	..	6.30	1.08	3.72	3.12	6.48	8.10	30.48	.72	60.00
Total	908.20	46.06	4.38	13.36	11.22	10.60	11.88	179.00	45.70	$1,230.40

Cost per yard, 58-in., $1.165.

No. 3.—Fancy Worsted and Woolen Suiting.

1056 yards; Weight per sq. yd. 11.9 ozs.; Threads per inch in Warp 56, Filling 54; Grade, Botany No. 1, 60s @ $.67; No. 2, 60s @ $.67; Woolen Weft @ $.30; Yarn, 570 lbs., No. 1, 2/28s; 330 lbs., No. 2, 2/24s; 534 lbs., Woolen, 2 5/8 runs.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	764.28	..	..	..	..	..	..	..	..	$764.28
Office Expense	..	19.08	..	..	..	..	..	..	..	19.08
Discounts, Terms, etc.	..	..	..	.36	.18	..	.12	20.82	.12	21.60
Warehouse	..	..	..	3.12	1.72	..	1.56	3.12	21.68	31.20
Patterns	..	..	..	.16	.06	..	.72	16.58	3.28	20.80
Weaving	..	12.36	3.30	4.80	4.94	4.12	1.38	86.40	19.90	137.20
Mending	..	..	..	1.20	1.20	..	..	21.60	..	24.00
Finishing and Dyeing	..	6.30	1.08	3.72	3.12	6.48	8.10	30.48	.72	60.00
Total	764.28	37.74	4.38	13.36	11.22	10.60	11.88	179.00	45.70	$1,078.16

Cost per yard, 58-in., $1.021.

No. 4.—Piece Dyed Indigo Suiting.

1056 yards; Weight per sq. yd. 14.0 ozs.; Threads per inch in Warp 44, Filling 48; Grade, Botany No. 80 @ 66c; Yarn, 1500 lbs. 2/20s.

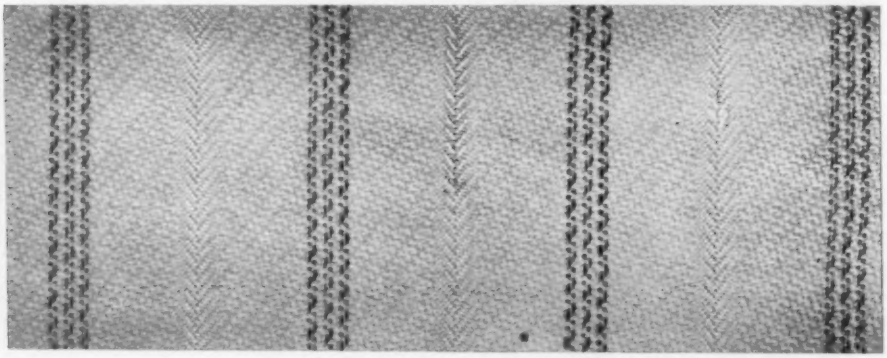
	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	990.00	..	..	..	..	..	..	..	..	$990.00
Office Expense	..	..	..	.36	.18	..	.12	20.82	.12	21.60
Discounts, Terms, etc.	..	30.00	..	..	..	..	..	..	..	30.00
Warehouse	..	..	..	3.12	1.72	..	1.56	3.12	21.68	31.20
Patterns	..	..	..	..	..	..	..	..	..	..
Weaving	..	9.84	2.64	3.84	3.90	3.26	1.10	69.12	15.98	109.68
Mending	..	..	..	1.20	1.20	..	..	21.60	..	24.00
Finishing and Dyeing	..	15.12	2.56	8.90	7.50	15.60	141.84	72.48	..	264.00
Total	990.00	54.96	5.20	17.42	14.50	18.86	144.62	187.14	37.78	$1.470.48

Cost per yard, 58-in., $1.392.

No. 5.—Wool Dyed Indigo Suiting.

1056 yards; Weight per sq. yd. 9.8 ozs.; Threads per inch in Warp 48, Filling 48; Grade, Botany Worsted No. 70 @ 80c per lb.; Yarn, 1180 lbs. 2/24s.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	944.00	..	..	..	..	..	..	..	..	$944.00
Office Expense	..	..	..	.36	.18	..	.12	20.82	.12	21.60
Discounts, Terms, etc.	..	31.20	..	..	..	..	..	..	..	31.20
Warehouse	..	..	..	3.12	..	..	..	..	..	..
Patterns	..	..	..	.16	1.72	..	1.56	3.12	21.68	31.20
Weaving	..	10.44	2.78	4.08	.06	..	.72	16.58	3.28	20.80
Mending	..	..	..	1.20	4.20	3.48	1.16	73.20	16.66	116.00
Finishing and Dyeing	..	10.08	1.76	5.96	1.20	..	..	21.60	..	24.00
Total	944.00	51.72	4.54	14.88	5.00	10.36	12.96	48.60	1.28	96.00
Cost per yard, 58-in., $1.216.					12.36	13.84	16.52	183.92	43.02	$1,284.80

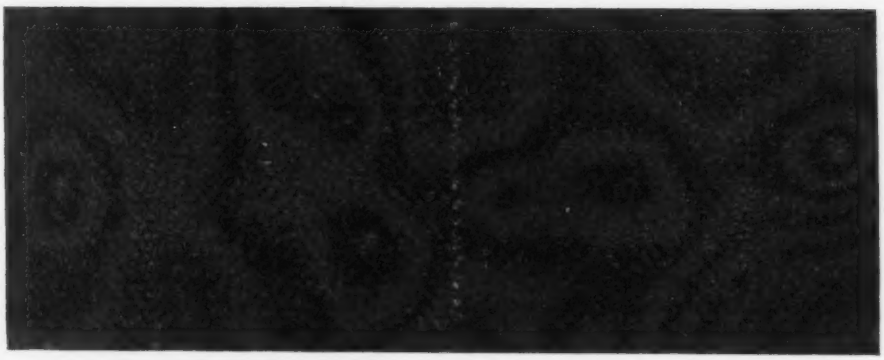


No. 6.—Wool Dyed Indigo Suiting.

1056 yards; Weight per sq. yd. 8.8 ozs., Threads per inch in Warp 56, Filling 50; Grade, Botany Worsted (white) No. 70 @ 68c, (black) No. 70 @ 68c; White Spun Silk @ $3.00; Yarn, 500 lbs. 2/28s; 25 lbs. 10/4s silk.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	415.00	..	..	..	..	..	..	..	..	$415.00
Office Expense	..	..	..	.36	18	..	.12	20.82	.12	21.60
Discounts, Terms, etc.	..	33.60	..	..	..	..	..	..	..	33.60
Warehouse	..	..	..	3.12	1.72	..	1.56	3.12	69.68	79.20
Patterns	..	..	..	.44	.44	..	2.00	46.08	8.64	57.60
Weaving	..	15.96	4.26	6.24	6.36	5.24	1.78	109.44	28.22	177.60
Mending	..	..	..	1.20	1.20	..	..	21.60	..	24.00
Finishing and Dyeing	..	10.08	1.76	5.96	5.00	10.36	12.96	48.60	1.28	96.00
Total	415.00	59.64	6.02	17.32	14.90	15.70	18.42	249.66	107.94	$904.60

Cost per yard, 58-in., $0.856.



No. 7.—Fancy Tweed, Low Quality.

1056 yards; Weight per sq. yd. 11.9 ozs.; Threads per inch in Warp 36, Filling 32; Grade, Woolen Blend @ 20c, Cotton Yarn @ 22c, Worsted Yarn and Twist @ 56c; Material 1310 lbs., woolen blend, 250 lbs., 1/20s, 60 lbs. 2/14s.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	350.62	..	..	..	..	..	..	..	..	$350.62
Office Expense	..	..	..	..	..	..	..	..	..	..
Discounts, Terms, etc.	..	3.72	..	.18	.10	..	.06	11.60	.06	15.72
Warehouse	..	..	..	1.52	.76	.08	.76	10.56	1.52	15.20
Patterns	..	..	..	.08	.02	..	.42	9.60	1.82	12.00
Weaving	..	8.20	2.20	3.20	3.52	2.74	.10	57.60	13.64	91.20
Mending	..	..	..	.60	.60	..	..	10.80	..	12.00
Finishing and Dyeing	..	5.04	.86	2.98	2.50	5.18	6.48	24.36	.60	48.00
Carding, Spinning and Twisting	..	19.80	1.48	7.44	5.72	9.70	4.64	27.68	7.54	84.00
Total	350.62	36.76	4.54	16.00	13.28	17.70	12.46	152.20	25.18	$628.74

Cost per yard, 58-in., $0.595.

No. 8.—Fancy Fine Woolen Overcoating.

1056 yards; Weight per sq. yd. 11.9 ozs.; Threads per inch in Warp 60, Filling 60; Grade, Fine Saxony Woolen Blend @ 56c; Wool, 1420 lbs.

	Yarn	Int. and Depr.	Repairs	Rent	Gas, etc.	Power	Supplies	Wages	Salaries	Total
Material	795.20	..	..	..	..	..	..	..	..	$795.20
Office Expense	..	33.60	..	.36	.18	..	.12	20.82	.12	55.20
Discounts, Terms, etc.	..	..	..	..	..	..	..	..	..	..
Warehouse	..	..	..	3.12	1.72	..	1.56	3.12	21.68	31.20
Patterns	..	..	..	.44	.24	..	2.00	46.08	8.64	57.40
Weaving	..	17.28	4.60	6.72	6.90	5.76	1.92	120.48	28.34	192.00
Mending	..	..	..	1.20	..	..	..	21.60	..	22.80
Finishing and Dyeing	..	12.60	2.16	7.44	6.24	12.06	16.20	60.96	1.44	120.00
Carding and Spinning	..	34.80	2.40	13.10	10.08	17.04	8.16	48.60	11.86	146.04
Total	795.20	98.28	9.16	32.38	25.36	35.76	29.96	321.66	72.08	$1,419.84

Cost per yard, 58-in., $1.344.

sary for preparing the cloth for the warehouse. It is connected with dyeing, as in the case of the dyed piece it is simpler to combine the charges for dyeing and finishing.

The differences in discount given and received, included under office expenses, are considerable, because the discount is allowed on the total cost of the cloth, which includes many items, such as wages and salary, rent, etc., on which no discount is received.

Office expenses also include the differences in terms of payment. Many goods bought for manufacturing are paid for on much shorter terms than the goods sold; that is, wool must be paid for in seven days, in addition the material is lying idle for the period of time required for manufacture, this varying on different classes of goods.

The terms of payment for cloth sold are very easy in the Huddersfield trade and probably six months would barely cover the time from paying for the raw material to receiving the payment for the cloth sold.

With regard to wages, nearly the same length of time would elapse between paying and receiving payment for the cloth. Hence a large amount of floating capital is necessary to finance a Huddersfield mill. The amount of this item is included in the office expenses and financial charges column and varies according to the cost of raw material, rates of wages, terms and other expenses.

Seasonable Fabrics.

DRESS GOODS.

Trade in dress goods has shown considerable improvement during the past few weeks. This has been due to the reorders that are being received for fall weight materials and to the buying of spring lines which has started in very brisk. Spring orders are being received. The buyers placing these orders realize that they must give their assortments now, to secure early shipment. Wool satins and prunellas are favored for spring. Shadow stripes in lustered faced fabrics are also very desirable.

The demand on broadcloths continues to be very active. Like all other dress materials, broadcloths are very scarce in the leading fall shades of London smoke, wistaria and peacock. These shades have outsold the staple shades of blues and browns. Black broadcloths are selling well.

Piece dyed fancies in a number of different weaves such as cheverons, herringbones and shadow stripes are being reordered in the staple colors.

Hair-line stripes both in plain and fancy weaves are selling well. Fig. 1 shows a neat hair-line on a diagonal weave, 50 inches wide, sold at 85 cents a yard by B. Priestley & Co. Fig. 2 shows a 54-inch cheveron from King & Beals at 85 cents a yard. Stripes are selling more freely than checks or plaids, although it is predicted that checks will be strong before the season ends.

Mohairs and sicilians are selling well both for immediate and spring deliveries. Fancy mohairs in neat stripe effects are in demand.

Both the domestic selling agents and the importers have booked a number of large orders on voiles for spring shipments.

SILKS.

The silk market continues very active. The demand on satins and satin faced silks is greater by many thousand pieces than the supply. With these conditions prevailing the manufacturers are running their looms to the full capacity, hoping to catch up with their orders. From the present outlook and the fact that the satin vogue is rapidly spreading it is very doubtful if any relief can be expected this season.

The most desirable colors are old rose, wistaria, London smoke, peacock and raspberry. These colors are being ordered in all grades of silk and are very scarce. It is impossible to secure all of these colors in any one grade. To a certain degree buyers have put price to one side as a secondary consideration, they being willing to pay a little more to get a complete color line.

Plain colored taffetas are also selling well in all of the new shades where deliveries can be made.

Desirable fancy silks are scarce. This is due largely to the fact that the manufacturers are not making up stock goods this season. Hair-line stripe, jacquard effects and self colored satin stripes are favored by the trade. Persian effects for fall waistings are selling well. Fig. 3 shows a very neat pattern, 20 inches wide, from Valentine & Bentley at 95 cents a yard. Fig. 4 shows a hair-line stripe "messaline raye," 20 inches wide, from Pelgram & Myer at 72 1/2 cents a yard.

FIG. 1.

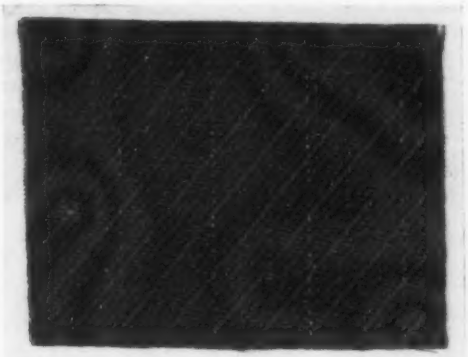
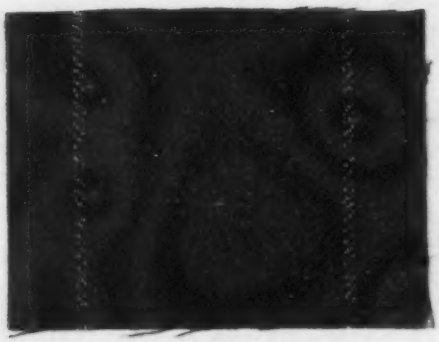


FIG. 2.



Bengaline continues to be very scarce. The importers have sold out their entire line and will not be able to furnish more this season. The domestic manufacturers are taking orders for delivery in 2 to 4 weeks.

The lines for the spring and summer seasons of 1909 are being displayed by the different silk houses. These consist of some very attractive novelties. Foulards and other lustered light weight silks are favored. A number of large orders are being placed for rough silks for spring deliveries.

COTTONS.

The cotton goods market continues to show an improved condition, with the advance on grey cloths of 2 1/2 to 5 per cent. The market in general shows a tendency toward firmer prices. Prompt deliveries are being made on all lines of staples, which is a great relief to the buyers, especially of goods for the sheet and pillow case trade, where shipments are generally slow during the fall season.

FIG. 3.

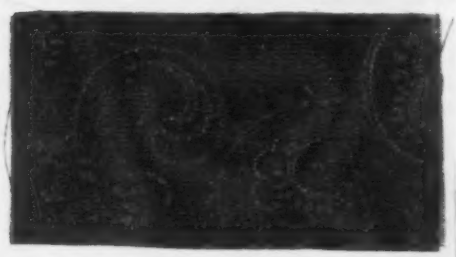
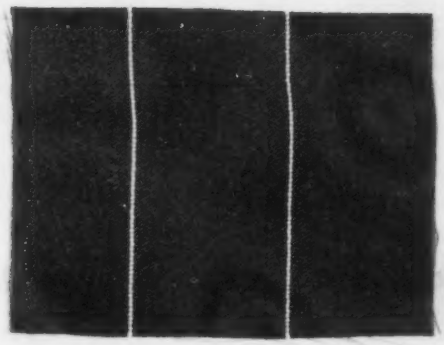


FIG. 4.



The demand on the several lines of dress ginghams that have been advanced for spring has been one of the features of the trade during the past month. The jobbers offered their stocks at the old prices, which were from 1/2 to 1 cent a yard under the quotations for next spring. These entire

lines were closed within a few days after the trade was informed of the new prices.

The reduction in the price of shirting prints from 5 to 4 1/2 cents was in no way a surprise to the trade. This reduction was made more to stimulate the sale of shirting prints for the coming season and to restore them to the price level they have always borne as compared with the indigoes.

The booking of spring orders of wash goods has shown considerable activity during the past few weeks. Ginghams continue to be the best sellers, with other colored woven fabrics for early spring deliveries in demand.

The demand for side-bands both for immediate and spring deliveries is very good in all grades of wash goods. These side-bands are being shown in a variety of neat styles and colorings in fine ginghams, 44 inches wide, ranging from 17 1/2 to 25 cents a yard.

The advance order trade in the white goods market is very good. Requests are being received from all sections of the country for staple white goods such as India linons, Persian lawns, long cloths, etc., for early spring shipments. These lines are being sold much cheaper this season than last. The trade in general has kept the white goods stocks very low for the past few months, only ordering small quantities at a time. Thus their stocks are clean and they will need a complete line to open up their spring season.

THE SOUTHERN TEXTILE ASSOCIATION.

An association bearing the name mentioned above and representing the technical branch of cotton manufacturing was recently organized at Charlotte, N. C., with the following officers:

President, J. A. Dean, Spray, N. C.; 1st Vice-President, C. F. McCall, Greenville, S. C.; 2d Vice-President, N. T. Brown, Raleigh, N. C.; Secretary, E. E. Bowen, Spray, N. C.; Asst. Secretary, J. H. Bagwell, Charlotte; Treasurer, David Clark, Charlotte; Board of Governors: E. E. Smith, Chairman, Chester, S. C.; H. H. Boyd, Charlotte; W. J. Danaho, Spray, N. C.; R. H. Matherson, Eatenton, Ga.; G. S. Escott, Charlotte; W. J. Willett, Cooleemee, N. C.; Thos. Nelson, Raleigh, N. C.; J. T. Buff, Greenville, S. C.; J. F. Broom, Hope Mills, N. C.; Lewis Brown, Gaffney, S. C.; J. H. Cobb, Belton, S. C.; J. B. Reid, McAdensville, N. C.

The object of the new organization is to provide means by which mill superintendents, overseers, designers and others in positions of responsibility can meet and work together for mutual improvement and the benefit of the cotton trade.

At the first meeting addresses were made by D. A. Tompkins, Charlotte, N. C., and E. E. Bowen, secretary of the association. Papers were read as follows: Electric Drive, by Albert Milmow; Fancy Weaving and Designing, by Prof. Thomas Nelson; Evolution of the Spinning Frame, by John W. Fox.

TARIFF HEARINGS.

The following announcement has been made by Hon. Sereno E. Payne, Chairman of the House Committee on Ways and Means:

The Committee on Ways and Means,
House of Representatives U. S.,
Washington, D. C.

The Committee on Ways and Means will hold Hearings on Tariff Revision, at Washington, D. C., commencing on the following dates:

Tuesday, Nov. 10, 1908, on Schedule A—Chemicals, Oils and Paints.
Thursday, Nov. 12, 1908, on Schedule H—Spirits, Wines, and Other Beverages.
Friday, Nov. 13, 1908, on Schedule F—Tobacco, and Manufactures of.
Monday, Nov. 16, 1908, on Schedule E—Sugar, Molasses, and Manufactures of.
Wednesday, Nov. 18, 1908, on Schedule G—Agricultural Products and Provisions.
Friday, Nov. 20, 1908, on Schedule D—Wood, and Manufactures of.
Saturday, Nov. 21, 1908, on Schedule M—Pulp, Papers, and Books.
Monday, Nov. 23, 1908, on Schedule B—Earths, Earthenware, and Glassware.
Wednesday, Nov. 25, 1908, on Schedule C—Metals, and Manufactures of.
Saturday, Nov. 28, 1908, on Schedule N—Sundries.
Monday, Nov. 30, 1908, on Schedule J—Flax, Hemp, and Jute, and Manufactures of.
Tuesday, Dec. 1, 1908, on Schedule I—Cotton Manufactures, and on Schedule L—Silks and Silk Goods.
Wednesday, Dec. 2, 1908, on Schedule K—Wool, and Manufactures of.
Friday, Dec. 4, 1908, on Sections 3-34, and Miscellaneous Matters.

Hearings on articles now on free list will be held on the above dates in connection with the

above subjects to which they most nearly relate.

The Hearings will be held in the rooms of the Committee, third floor, House of Representatives Office Building.

Sessions will begin at 9.30 a. m. and 2 p. m., unless otherwise ordered.

Persons desiring to be heard should apply to the Clerk of the Committee previous to the day set for the Hearing, to be assigned a place on the program for that day. A person making such application should state:

1. His name.
2. His permanent address.
3. His temporary address in Washington.
4. Whom he represents.
5. Concerning what paragraphs he desires to be heard.
6. Briefly, what position he expects to advocate.
7. How much time he wishes to occupy.

He should also inclose a copy of his brief and of any documents he desires filed with the Committee.

All briefs and other papers filed with the Committee should have indorsed on them the name and address of the person submitting them, and the numbers of the paragraphs of the present law (Act of June 24, 1897) to which they relate.

William K. Payne,
Clerk, Committee on Ways and Means.

Cost of a Worsted Serge in the North of France

BY ROUBAIX.

I will give here the particulars regarding the manufacture of a worsted serge in France, including an estimate of cost. If it proves to be of interest to the readers of the Textile World Record, I will give like information regarding other French fabrics. They will show clearly why the French wool industry has reached such large proportions.

We will take for our first illustration the piece-dyed serge shown at Fig. 1. Following are the details of construction and an estimate of cost:

No. 1. Quality A. Worsted Serge, 4-leaf twill. Width, 49 1/4 inches in loom, 47 in. woven, 46 1/2 inches finished.
Warp, 1,968 ends 2/37 worsted.
Filling, 43 picks 2/37 worsted.

Weight:	
Warp	3.5 oz.
Filling	3.3 oz.
Woven	6.8 oz.
Warp:	
Take-up	4 per cent.
Sizing	8 per cent.
Filling waste	2 per cent.
Cost:	
6.55 oz. yarn at $.473	$.193
Weaving	.016
	.209
10 per cent.	.021
	.23
Dyeing	.039
	.269
Contingencies, 3 per cent.	.008
Price per yd. finished	.277

We learn from this estimate that the fabric costs $.277 per yard; 49 1/4 inches wide. It is woven on an over-pick Hodgson cam loom with a reed space of 51 inches and running 140 to 150 picks per minute. This is equal to about 84,000 picks per working day and an expert weaver can turn off 60,000 picks of cloth per day. She runs two of these looms and is paid a maximum of .024 francs (1/2 cent) per 1,000 picks. At this rate a good weaver can easily earn from 60 to 70 cents per day, or from $3.60 to $4.20 per week.

It will be noticed that in the estimate the price of weaving is figured at .05 franc (1 cent) per 1,000 picks. This is the price that is paid to the proprietor of the weaving mill who in turn pays the weaver .024 franc (1/2 cent) as stated above.

This estimate of French cost was made at our request by a French manufacturer of long experience as a mill manager and proprietor. To enable our readers to compare the cost in France with the cost of manufacturing the same cloth in the United States we submitted "Roubaix's" estimate and the sample to a thoroughly competent American manufacturer of worsted cloths, who prepared the following report on it:

Editor Textile World Record:

Dear Sir: We make the cost of French serge which you sent us with request for an estimate, as we should make it, to be as follows:

No. 1 quality, a worsted serge, 4-leaf twill, 1,968 ends, 2/37s worsted, 3/8 blood stock, set 49 1/4 inches in reed, 56 yards of warp per cut, 43 picks of filling per inch, same yarn as in warp.

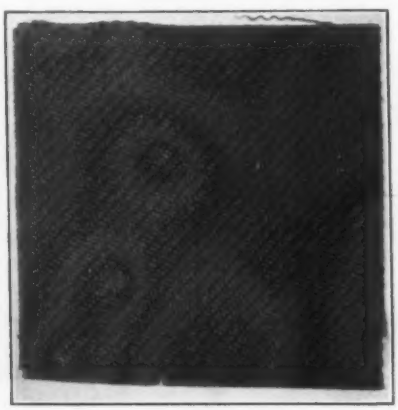
Warp, 10.85 lbs. at 87½c. (including 2% waste)	$9.49
Filling 11.36 lbs. at 87½c. (including 3% waste)	9.94
Warping	.20
Drawing in, etc.	.10
Winding filling	.12
Weaving	1.05
Burling and mending	.54
General expense	2.01
Dyeing and finishing (including freight and packing)	3.12
52 yds.	$26.57

Net cost, 51.1 per yard.

Very truly yours,

Narragansett.

We reduced the French expressions of weight, measure and value to American



WORSTED SERGE.

equivalents, but a comparison of the two statements is made difficult because they are made up by two separate methods. Nevertheless a striking feature is at once disclosed. The American cost is practically double the French cost. This is true not only of the total amount, but of the cost of the yarn, which is the principal item.

These estimates are for the goods as made at a mill buying its yarn, consequently no separate comparison of the cost of the wool and of manufacturing the yarn can be made from them.

WEIGHT OF BAGGING AND TIES.

There is almost as wide variation in the weight of bagging and ties used as a covering for the cotton crop as there is in the different names and numbers used by cotton firms and exchanges to designate the various grades of cotton. With regard to bagging and ties there is an allowance of 6 per cent. off, or 30 pounds to the bale for tare by the foreign trade. In Savannah there is an allowance of 7 yards of 2 1/4 pound bagging. The New England spinners have agreed to an allowance of 22 pounds of bagging and ties to the bale, while interior buyers insist on only 6 yards of bagging and 6 bands. The majority of farmers buy light bagging, so that the average weight of the bagging and ties on a bale of cotton delivered by farmers to buyers amounts to about 21 pounds.

In this wide complication of differences in the weight of bagging and ties the farmers as usual get the worst end of the bargain. Nearly 65 per cent. of the crop goes abroad, and in the price paid for export cotton the farmers have to stand a loss of 30 pounds to the bale for bagging and ties, so that if they put on 21 pounds they lose 9 pounds of lint in addition to bagging and ties they pay for and put on the bale. Spinners do not pay for bagging and ties. The buyers do not pay the farmers anything for bagging and ties. No farmer has ever sold a pound of bagging and ties to anybody. The bagging and ties on a bale of cotton is a net loss to the man who had the bale ginned.

The cotton growers of the South are losing millions of dollars annually on account of their indifference or ignorance regarding this question of bagging and ties. There is but one correct, fair and businesslike method of settling this matter on a basis of equity to all parties at interest, and that is to sell cotton strictly on net weight, just as the spinners buy it from the cotton factors or exporters. The weight of all bagging should be uniform and the same number of yards used on each bale. Good, heavyweight bagging should be used and under existing

regulations every farmer should put on the full allowance, else he loses a portion of his lint. This is a serious matter which should be remedied by mutual agreement of all parties at interest, the grower and the spinner. There is too big a margin left for graft, call it legitimate or what not, which the farmers should no longer stand for. We have called attention to this matter many times and the farmers are getting sufficiently organized to secure a sentiment of the tare question on a fair and systematic basis. We are continually noticing articles in papers devoted to cotton information stating that the farmers make a profit on their bagging and ties. This is a delusion, which only reflects on the ignorance of those making the assertion. As a matter of fact, more than the average value of the bagging and ties is always deducted from the price paid the farmer, the same as freight and all other fixed charges. —The Cotton Journal.

Hygroscopic Properties of Textile Materials

BY TH. SCHLOESING FILS.

A report made to the Societe d'Encouragement pour L'Industrie Nationale, Paris, France (1893).

(*Translated by the Editor of the Textile World Record.*)

General: Textile materials possess very marked hygroscopic properties. Exposed to the air, after being dried, they become charged with relatively considerable quantities of moisture. They are necessarily composed of very slender filaments, exposing a large surface and consequently fitted to promote the condensation of a large proportion of the vapor of water.

The trade in textile materials and still more the industries which manipulate these materials have a strong interest in knowing what quantity of water the materials absorb or retain under given conditions. It is my purpose to give precise data regarding this subject. Apart from the practical side of the question, my investigations may perhaps prove of some value in the general study of hygroscopic properties of textile materials.

The quantity of water that a hygroscopic material in equilibrium with the surrounding air contains is a function of two variables: The relative humidity of the air and the temperature. This is doubtless well known to the greater number of physicists and chemists, but is less generally known than is commonly supposed; for requests are frequently made to have the humidity of this or that substance determined without giving the value of the two variables on which this humidity actually depends. We find for example in recent books such statements as the following: silk in a dry room retains such a percentage of humidity and the exact figure is given without any reference to the hygroscopic condition or the temperature of the atmosphere. Now in a room called dry, the hygroscopic condition, as well as the temperature, may vary within widely separated limits, causing, as we shall see, the degree of humidity in silk to vary from one to two or three fold. There are also writers who speak of the natural humidity acquired by cotton exposed to the air and state the exact degree, as if such a degree could be fixed regardless of other factors. Such writers illustrate the need of directing attention to the conditions on which the humidity of textile materials depends, and to determine those conditions.

When, therefore, an equilibrium of humidity is established between a hygroscopic material and the surrounding air, there is at each temperature a relation between the humidity of the material and the relative degree of humidity of the air, so that a given value for the latter corresponds to a certain value for the former. It is this relation that I have studied.

Methods employed: Following is the method employed for the experiments: The substance to be examined and the air are brought into contact until an equilibrium is reached, that is to say, until there is no fur-

ther transfer of vapor of water between the air and the material; means are then devised to determine the humidity of the material and that of the air. There are several ways of carrying on these experiments: 1. Bring the air to the point of equilibrium by passing it through a relatively considerable weight of the material of which the humidity does not vary sensibly; 2. Or bring the material to the point of equilibrium by bringing a similar quantity of the substance in contact with air, having a known degree of relative humidity.

It will be sufficient for me to indicate briefly how I have carried out these methods.

I carried out the first method practically the same way as I had occasion to do in former experiments with tobacco, which are reported in the records of the Academy of Sciences. A metal cylinder from 50 to 60 mm. in diameter, and 1.25 m. long, placed in a bath of water which is maintained at a constant temperature for each experiment, is filled with the material to be studied. A gentle current of air is passed through the tube from the top to the bottom. During this passage, the air and the material reach an equilibrium of humidity; upon being removed from the cylinder, the air is divested completely of humidity in an absorbing tube containing boiling sulphuric acid, and is then passed to an inhaling gasometer where it is measured exactly. Its relative degree of humidity is then determined from the weight of moisture left in the absorber. The humidity of the material is also carefully determined. This humidity may decrease or increase slightly during the experiment at the upper part of the tube which receives the first contact with the current of air; but, otherwise it does not change. The degree of humidity in the center and at the lower part of the tube is accepted.

This experiment having been completed as described, a double series of experiments are made by varying successively the humidity of the substance and the temperature. In this way the desired relation is determined for each temperature studied.

Some observations on this first method will be useful.

The temperature of the bath surrounding the materials being tested is regulated by a thermostat, and does not vary more than two or three hundredths of a degree during the experiment; the temperature is maintained uniform throughout the bath by the continual agitation of the water by an abundant current of air.

The tubes in which the material is placed should not be too large, so that the temperature of the interior may be the same as that of the bath, notwithstanding the current of air of a different temperature.

The bath which I have used contained four tubes, which communicated with an absorber and gasometer; this made it possible to carry on four experiments at one time.

It is necessary to bring the material to be tested to the degree of humidity that has been nearly determined in advance. With this object in view, a homogeneous lot of the material is obtained and the humidity determined by experiment. If the material is to be dried more or less, it is spread out in an oven at a temperature of 30° or 40° C. until it has lost the determined proportion of weight. If, on the contrary, it is to be made more moist, it is exposed to humid air in an enclosed chamber until the desired weight has been obtained. When brought to the desired degree of humidity, the various parts are well mixed, and it is then enclosed in a receptacle such as a glass bell, and hermetically sealed, where it is left long enough for the water to become uniformly distributed through the material. In order to determine the final humidity of the materials, that which they possess when an experiment is completed, the tubes are emptied and three samples are taken from the lower part of the contents of each of the tubes. These samples are immediately placed in glass tubes fitted with ground glass stoppers, and which can be weighed before and after drying. The last named operation is carried on in an oven at a temperature of 110° C.; it is maintained for five or six hours because during their stay in the oven, the materials are

not removed from the glass cases, which are simply uncorked, and, consequently, the removal of the water is rather slow.

The second method by which the material to be tested is brought into contact with air possessing a given degree of humidity until an equilibrium is reached, is carried on in different ways. I have employed a process similar to that which Regnault described in connection with his verification of hair hygrometers. The samples to be studied are suspended in tubes tightly closed and at the bottom of which are various solutions of sulphuric acid of known strength, the latter regulating the condition of the atmosphere of which the relative humidity, according to the experiments of Regnault, is perfectly known. At the end of several days, the humidity of each sample is determined. As the strength of the sulphuric acid solutions may have changed slightly during the experiment, the exact composition is finally determined by means of standard solutions of carbonate of soda.

I have employed both methods. The first appears to me to be preferable. It requires more apparatus, more operations, calculations and time; but it is, I think, more exact, because the weight of the material tested is greater. The second method has served simply to verify the results of the first, that is not exactly, but in a general way, for the purpose of determining that there are no notable and systematic errors.

Materials studied: I have experimented with a sample of each one of the following materials: yarn made of American cotton; yarn made of Egyptian cotton; yarn made of Indian cotton (Cocanadah); raw Cevennes silk (yellow silk); boiled off Cevennes silk; raw China silk; boiled off China silk; Buenos Ayres crossbred wool combed; Port Philip merino wool combed.

These samples have been obtained from MM. Seydoux et Cie et MM. Roy freres, who have given me exact information regarding the source of the materials. One of these manufacturers informed me of his strong desire to have exact scientific tests made of the humidity in textile materials. Such also was the sentiment of M. Persoz, director of the Conditioning House at Paris. Hence my researches. I cannot give here all of the figures relating to the 180 or 190 experiments made, but will simply give in detail an example of the application of each method.

An experiment made by the first method:

b, The average temperature of the bath during the experiment in which the metallic tube containing the materials was immersed.

Fb, The maximum tension of the vapor of water at b°.

Hm, The average barometric pressure reduced to O°.

V, The volume of the gasometer (gauge at 15°) containing finally the air inhaled. (The dilation or contraction of the envelope is not taken into account.)

H, The barometric pressure reduced to O° at the end of the experiment and at the moment the air is measured.

h, The excess of the exterior pressure over the pressure in the gasometer at the same time;

t, The temperature of the air in the gasometer at the same moment (the gasometer is immersed in water, which is agitated at the end of the experiment and supplies the temperature t);

Ft, The maximum tension of the vapor of water at the temperature t;

a, The coefficient of the expansion of the gas;

p, The weight of the vapor of water collected in the absorber by the sulphuric acid;

f, The tension of the vapor in the air which passes from the metal tube containing the material and which is brought into equilibrium of humidity with this material.

It is easy to see that:

$$f = \frac{H_m}{1 + V \dfrac{H - h - F_t}{p\,(1+at)\,760}.8047},$$

.8047 represents the weight of a liter of vapor at O° (thermometer) and 760 mm. (barometer). In this experiment we have:

b=34.88°; F_b = 41.55mm.; H_m = 741.5mm.; V = 10088ccm.; H = 741.4mm.; h = 33mm. water = 2.4mm of mercury; t = 15 8° and 1 + at = 1,0578; F_t = 13.4mm. p = .1884 gr.

All calculations having been made, the form-

ula gives the following degree of relative humidity:

$$\frac{f}{F_s} = .447.$$

The passage and the measurement of the air having been completed, the material is taken from the tube and three samples of 2.5 to 3 grams each are taken from the lower third of the tube, the air having left the tube at the bottom. The humidity of these samples was determined with great care. The humidity per 100 parts of dry material for the three samples were as follows: 5.82; 5.69 and 5.77; the average was taken at 5.75.

It follows from this experiment that the relative humidity of the air which at a temperature of 34.88° is in equilibrium of humidity with a sample of cotton containing 5.75 parts of water for every one hundred parts of dry material is equal to 44.7 per cent.

Experiment made by the second method: To the bottom of a flask of one liter capacity about 100 c.c. of a solution of sulphuric acid is introduced, this solution corresponding nearly to the formula $SO^3 + 18\ H^2O$. Three skeins of cotton yarn (American, Egyptian and Indian) each weighing a little more than 5 grams, were suspended above the liquid. The flask was tightly closed with a rubber stopper, and immersed in a bath of water maintained at a constant temperature of 24° by thermo-regulator. At the end of five days, the humidity of each of the three skeins is determined. It is better to make one test of the humidity at the end rather than test it during the process, as the drying at 110 c. by the latter method changes the hygroscopic properties of the fiber. Following are the results based on 100 parts of the absolutely dry material:

American cotton	10.97
Egyptian cotton	11.28
Indian cotton	11.85

In order to determine exactly the final composition of the solution of sulphuric acid, the acidity was determined by means of a standard solution of carbonate of soda. The result of this test was as follows:

In 1.1336 grams of the solution:

Sulphuric acid (anhydrous)	.2212 gram
Water	.9124 gram

Consequently the solution corresponds actually to the formula: $SO^3 + 18H^2O + 0.33H^2O$. It is now easy to determine the relative humidity of the air in the flask. It only remains to draw, according to the experiments of Regnault, the curve representing the relation at 24° between the standards of the solutions of sulphuric acid and the relative humidity of the air in equilibrium of humidity with these solutions. By means of this curve it is found that the solution $SO^3 + 18H^2O + .33H^2O$ corresponds to a relative humidity of .83.

From this experiment it is concluded that the three cottons studied acquire at 24° the three indicated degrees of humidity when they are brought in contact with air, having a relative humidity of .83.

Results of the experiments: After what has been said, it remained necessary to experiment at different temperatures in order to keep within practical limits. I worked at temperatures between 12° and 35° C:

FIRST METHOD.

American Cotton.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
2.75	24	10.5
5.1	12	35.0
5.1	24	39.0
5.1	35	42.1
7.2	12	59.1
7.2	24	62.9
7.2	35	66.1
10.3	12	77.6
10.3	24	81.0
10.3	35	83.4
13.75	12	87.9
13.75	24	88.8
13.75	35	90.9
20.	24	96.1
32.8		Saturated

Egyptian Cotton.

SECOND METHOD.

Relative Humidity of Air 24° C.	Water per 100 parts Dry Material. American Cotton.	Egyptian Cotton.	Indian Cotton.
51	6.25	6.75	6.90
71 ½	8.40	8.95	10.15
83	10.95	10.30	11.85

Buenos Ayres Cross Bred Wool, Combed.

Relative Humidity of Air, 15° C.	Water per 100 parts Dry Material.
29	9.65
51.5	13.25
72	16.00
83.3	18.85

Tests of same in Vacuum.

Relative Humidity of Air, 15° C.	Water per 100 parts Dry Material, after two days.
.255	9.1
.508	12.95
.71	15.95
.832	19.70

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
2.5	24	10.0
4.3	12	22.4
4.3	24	26.3
4.3	35	29.5
8.15	12	62.4
8.15	24	66.2
8.15	35	67.8
11.15	35	83.5
15.5	12	88.8
15.5	24	91.7
15.5	35	92.6
19.2	24	94.6
33.2		Saturated

Indian Cotton.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
2.7	24	10.5
5.75	12	40.3
5.75	24	41.1
5.75	35	44.3
8.6	12	60.4
8.6	24	62.9
8.6	35	66.6
10.75	24	76.3
10.75	35	78.9
16.15	12	91.0
16.15	24	91.5
16.15	35	92.4
19.	24	94.0
30.		Saturated.

Buenos-Ayres Cross Bred Wool, Combed.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
5.55	24	15.0
11.2	12	33.1
11.2	24	37.8
11.2	35	44.2
15.25	12	61.6
15.25	24	65.6
15.25	35	70.6
19.1	12	77.4
19.1	24	81.9
19.1	35	85.2
27.6	12	93.2
27.6	24	94.6
27.6	35	96.3

Port Philip Merino Wool, Combed.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
8.3	12	24.5
8.3	24	25.8
8.3	35	31.8
14.9	12	57.5
14.9	24	61.8
14.9	35	69.4
21.9	12	83.1
21.9	24	86.3
21.9	35	89.2
29.0	12	95.4
29.0	24	95.7
29.0	35	96.1

Raw Cevennes Silk.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
7.5	12	31.6
7.5	24	35.1
7.5	35	38.3
9.7	12	50.5
9.7	24	56.3
9.7	35	61.7
14.2	12	75.0
14.2	24	78.6
14.2	35	81.9
16.5	12	83.9
16.5	24	86.1
16.5	35	88.1
25.6	12	94.8
25.6	24	95.0
25.6	35	95.1

Boiled Off Cevennes Silk.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
6.55	12	27.9
6.55	24	32.6
6.55	35	37.0
11.6	12	65.3
11.6	24	71.3
11.6	35	76.8
14.65	12	79.6
14.65	24	82.2
14.65	35	84.7
22.0	12	94.3
22.0	24	95.1
22.0	35	95.6

Raw China Silk.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
7.4	12	34.1
7.4	24	36.2
7.4	35	38.2

12.35	12	67.3
12.35	24	72.5
12.35	35	77.3
17.1	12	86.8
17.1	24	88.3
17.1	35	89.5
23.8	12	95.2
23.8	24	96.0
23.8	35	96.8

Boiled Off China Silk.

Parts Water per 100 Parts Dry Material.	Temperature Centigrade.	Relative Humidity of the Air.
6.1	12	31.1
6.1	24	33.6
6.1	35	36.0
11.65	12	68.9
11.65	24	73.7
11.65	35	78.2
14.95	12	83.6
14.95	24	85.2
14.95	35	86.6
23.3	12	94.1
23.3	24	94.5
23.3	35	94.8

The greater number of experiments on cotton and wool were made near to three temperatures, 12°, 24° and 35° C.; all were made in duplicate. For the silk which was studied last, profiting by experience with the other materials, I experimented at temperatures of approximately 12° and 35° C. without duplicating each test.

Representing the results by curves: Results of all the experiments by the first method have been represented by curves. Slight corrections have been made when necessary to make the curve correspond with the exact temperature 12°, 24° and 35° C., and the curves have been drawn to correspond with the data thus obtained. The proportion of humidity based on 100 parts of absolutely dry material have been taken for the abscissae, and the degrees of relative humidity of the air have been taken for the ordinates.

It will be noticed by referring to the same coordinates that the points corresponding with the results of the second method fall generally near to the curves already traced. This is proof that the first method does not involve important systematic errors against which it is always necessary to be on guard. There appears to be a slight difference between the results of the two methods in the case of wool; for the second gives at 15° nearly the same curve that the first gives at 24°, but I place greater confidence in the first, which is derived from a large number of concordant experiments, and I have adopted the figures which it gave. Moreover the experiments by the second method were not carried on long enough; they are sufficient, however, to supply the desired verification. For each sample of material the figures by the first method enable us to draw three curves corresponding respectively to the temperatures of 12°, 24° and 35° C. All these curves cannot be traced on the same chart without introducing confusion.

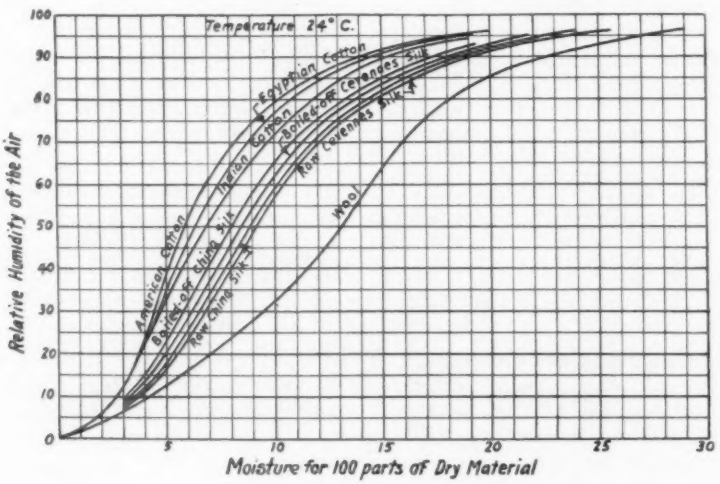


FIG. I.

Accordingly, the first chart shows the curves for one temperature 24° (it is a good plan to represent them alongside each other in order to facilitate comparison); the second chart gives the curves for a sample of each of the three materials, cotton, silk and wool, so as to show the influence of the temperature on their hygroscopicity.

Conclusion.—All the curves have the same general direction. As regards the cottons, they give evidence of notable differences between the three samples examined. Do these differences result from the source of the samples, or are they due to a variation in the properties, which are independent of the place of origin? To decide this point it will be necessary to experiment further on a number of samples from the three sources, but such as they are, the results obtained prove that all of the cottons do not act the same in the presence of moist air. That is to say, they absorb at the same temperature sensibly different degrees of humidity when in presence of atmospheres having the same relative humidity. There is no doubt about this conclusion; the second method of experiment corresponds entirely with the first and establishes its accuracy. The boiled off raw silk absorbed slightly less moisture than the raw silk of the same origin; this is explained by the removal of the gummy matter, which is very hygroscopic. There is very little difference between the two silks taken in the same condition.

The two samples of wool with which I experimented gave practically the same results, so that these results can be given by one curve.

The influence of the temperature on the quantity of water absorbed by the materials in the presence of an atmosphere having the same relative humidity is comparatively slight; while the temperature rises from 12° to 35°, the relative humidity of the air remaining for example, equal to .51. The number of parts of water for every 100 parts of absolutely dry wool decreases scarcely from 14 to 13. This slight influence of the temperature is worthy of attention. It is not peculiar to textile materials; it has been observed in vegetable earth and tobacco; it may indicate a general property of hygroscopic substances. The textile industries in which textile materials are constantly brought in contact with moist air have a special interest in the results of these experiments which furnish precise data for the examination of various problems connected with humidity; for example, they will help to indicate what humidity the materials will possess at a certain temperature when in contact with air of a known relative humidity, or what relative humidity it is neces-

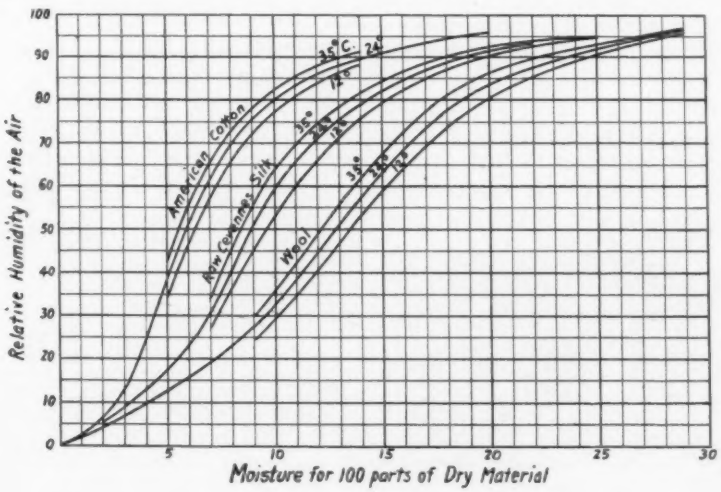


FIG. 2.

sary to give to the air, in order that the materials may possess a certain degree of humidity. This last question is one frequently encountered in spinning and weaving. The curves shown in the charts indicate at once the solution. This is what makes them of practical value. In using these curves it should never be forgotten that the relations which they represent are based on an equilibrium of humidity between the materials and the air; if this equilibrium is not attained the curves will indicate a tendency toward an equilibrium, that is, toward what degree the humidity of the materials tends under known conditions of relative humidity, and temperature of the air.

The New British Patent Law

(BY AN ENGLISH CORRESPONDENT.)

England made a new and momentous move in respect to her patent law on August 28. To enable your readers to fully appreciate what this move means it will perhaps be best before dealing with the new Act to

IVAN LEVINSTEIN, THE REAL AUTHOR OF THE BRITISH PATENT ACT.

make some reference to the Act from which we have just escaped. The word "escaped" is used advisedly, for there is no doubt but that we in England, in respect to the effect which our patent laws have hitherto had on our industries, have been like helpless prisoners, and prisoners moreover held by self-made bonds, bonds which have been forged in ignorance and all too long controlled by indifference.

The theory pertaining to the value of patents is that they are "granted for the encouragement of national industry." In actual practice they have been granted in England mainly for the encouragement of foreign industry. The granting of a patent is, per se, an act of protection—a monopoly—a restriction on trade. The grant is made to stimulate ingenuity, to foster industrial progress, to promote the development of a country's resources. These are the advantages which are looked upon as adequate consideration by a State in return for the monopoly it grants, and of course are advantages which are to accrue to the granting country. It is obvious that, all other things being equal, these advantages cannot be as fully secured to a country which does not insist on the patented processes being carried out within its borders as is secured by a country that does make such a condition. In the first place a State that grants a patent and allows it to be worked wholly abroad fosters foreign labor and helps to develop foreign industry. As a new article generally displaces something already in use, the introduction of it throws a number of workpeople out of employment. Further, the grant of a 14 year monopoly to a foreigner tends to give him a permanent monopoly. During those 14 years his workpeople are gaining experience in the manufacture while he is extending his trade

to all countries and perfecting his distributing arrangements. On the other hand the country granting the patent has at the end of 14 years neither skilled labor trained in the special kind of manufacture, nor the special plant adapted for the purpose, nor the organization for distribution. In this way has English trade been injured, employers and workpeople handicapped, and a tremendous shackle placed on British industry, present and future.

REFORM AND THE REFORMER.

Reference to the accomplishment of this great reform in the English patent law would be incomplete if credit were not given to Ivan Levinstein, who started the agitation against the old abuses many years ago and continued it in the face of determined opposition and popular indifference, until it was incorporated into British law. Great credit is due to the President of the Board of Trade, D. Lloyd-George, for having introduced the bill in Parliament. But the one to whom greatest credit is due is Mr. Levinstein. As far back as 1881 Mr. Levinstein called attention to the great injury inflicted on British trade by the working of British patents exclusively in foreign countries. If his advice had been followed then, British industries would be far more extensive than they now are; while many industries now firmly established in foreign countries would never have been brought into existence there. Mr. Levinstein's services in connection with this great work were acknowledged by the Hon. D. Lloyd-George in the following words:

> I had great assistance from Sir William Holland, and notably also from Mr. Levinstein and Sir Joseph Lawrence. Mr. Levinstein has fought that matter out with great tenacity and courage, and verily has got his reward. You have had patent laws before with the principle of compulsory working in them somewhere, but they were left to Mr. Levinstein to put into operation.

During the agitation in 1897 the President of the Board of Trade made a grievous error of judgment, an error which must have cost England an enormous sum of money. He apparently regarded the matter as a legal and not an economic question and the Committee appointed to investigate the operation of the Patent Act of 1883 were a Committee of officials and lawyers with a prominent patent agent, while inventors and manufacturers who were acquainted with the working of patents and their bearing on industry were conspicuously absent. It was also well known at this time that the principal opposition to the compulsory working clauses came from patent agents and lawyers. The President of the Board was pressed to extend the scope of the enquiry and to include inventors and manufacturers in the Committee, but he remained obdurate. The findings of the Committee were sorely

RUSHING THE CONSTRUCTION OF THE FARBENFABRIKEN PLANT NEAR LIVERPOOL, TO MANUFACTURE UNDER THE NEW BRITISH PATENT ACT.

disappointing to the industrial and commercial community and surprised even the Board of Trade itself.

In consequence of the continuance of the agitation for compulsory working of patents another Patent Bill was passed into law in 1902, but it reflected too much the opinions of patent agents and the recommendations of the Departmental Committee to be of any value so far as compulsory working came in question.

In March, 1906, the Associated Chambers of Commerce of the United Kingdom passed a resolution asking for such an amendment of the Patent Laws which should

> enforce in the United Kingdom the forfeiture of all British patents for inventions which are worked without, but not within, the United Kingdom after a lapse of three years from the date of application, unless the patentee can justify his inaction to the satisfaction of the Board of Trade.

Those plainly expressed desires were embodied in the Act of 1907 and foreign patentees are already in England erecting factories and founding new industries.

UNDER THE OLD ACT.

The magnitude of this foreign exploitation of England's market and industries will be gathered from the fact that out of 45,000 patents granted by England in the three years ending 1905, 24,000 of them were conferred on foreigners, who, special circumstances excepted, have worked their monopolies in their own countries, but not in England. Another fact is that while we granted those 45,000 patents Germany granted only 28,000, the result being that thousands of improvements could be carried out by anyone in Germany while in England they were monopolized. This policy has been carried on to such an extent that at one time England was actually dependent on foreigners for the supply of the materials necessary to manufacture explosives.

ANOTHER VIEW OF THE FARBENFABRIKEN WORKS IN COURSE OF CONSTRUCTION ON BRITISH SOIL.

A few concrete examples of our legislative folly will be interesting:

SOME EXAMPLES OF FOLLY.

Cloth.—A Manchester merchant bought for a considerable period a certain cloth from Germany, which he sold at 32 cents a yard and made a handsome profit. As the ordinary price was 40 cents, he built up a big business. He eventually got a letter from a German lawyer threatening him with proceedings for infringement if he did not cease to sell the cloth. It turned out that a German had taken out a patent in England as well as in Germany for the manufacture of this cloth, but the patent was finally refused in Germany. The German patent being null and void, everybody was at liberty to make and sell the cloth except in the United Kingdom, where its sale re-

mained a close German monopoly, with the result that the cloth could be bought on the Continent much cheaper than in England.

Alizarine.—This important dyeware is made from a raw material of which the United Kingdom is the largest producer. The technical processes for making it were patented in England by a number of German patentees but no patent was granted in Germany. Anyone could make and sell it there while in England it remained a German monopoly. The German manufacturers made immense profits which enabled them to develop the manufacture and make arrangements for distributing their products in the various markets of the world. This 14 years' start has enabled them practically to maintain the monopoly although the patent rights lapsed 25 years ago.

Indigo.—The same foolish policy has been followed that pertains to Alizarine, but in this case we have built up a German industry and destroyed a British-India industry. The German's return for a British monopoly has been to throw out of employment 200,000 natives of India, besides a large number of British clerks and officials. He has also ruined an important British trade, with a turnover of $15,000,000 a year, and injured our shipping and carrying trade, besides closing the business of some British traders and shippers.

UNDER THE NEW ACT.

The New Act reads as follows:

At any time not less than four years after the date of a patent, and not less than one year after the passing of this Act, any person may apply to the Comptroller for the revocation of the patent on the ground that the patented article or process is manufactured or carried on exclusively, or mainly, outside the United Kingdom.

Sub-sections provide that unless the patentee gives satisfactory reasons to the Comptroller why the article or process is not manufactured or carried on in the United Kingdom the Comptroller may make an order revoking the patent either

(a) forthwith, or

PREPARING FOR THE CONSTRUCTION OF WORKS IN ENGLAND TO CONFORM TO REQUIREMENTS OF THE NEW PATENT ACT.

(b) after such reasonable interval as may be specified in the order. If within the time limit in the order, the patented article or process is not manufactured or carried on within the United Kingdom to an adequate extent, but the patentee gives satisfactory reasons why it is not so manufactured, the Comptroller may extend the period mentioned in the previous order for such period not exceeding 12 months as may be specified in the subsequent order.

It is obvious that this second clause that nothing harsh is intended for the patentee, but the German has worked itself up to a fury about England "daring to introduce compulsory working." The "Kreuz Zeitung" thinks that the hostility between Germany and England will be intensified if we persist in enforcing the new Law which it is said is "incompatible with Free Trade and a fair commercial policy." The "Berliner Tagblatt" much more sanely points

out that the Act is damaging and must continue to inflict serious injury on the industries of the Continent, and further states that "the disastrous results will be intensified by the fact that only the leading German firms owning English patents can establish their own works in England, and that small firms must give up finding a market in England, for England will now make the goods for itself at home."

GERMANY CRIES "QUITS."

Again quoting the "Berliner Tagblatt" the Germans are informed by it "that after all, England has only followed the bad example set by Germany in days gone by, for Section XVI of the German Patent Law contains restrictions on foreign patents quite as harsh as any contained in the new English Act. In view of the bad outlook for German industry in the immensely important English markets, there is a striking argument in favor of abolishing all such restrictions by means of an International agreement on the matter." As Mr. Levinstein has publicly pointed out in England, it is hardly fair to us that Germany should cry "quits" now after deriving such enormous advantages from our previous patent laws.

From a perusal of German newspapers one gets the impression that Section 27 was especially directed against Germany, yet we grant the United States 500 patents a year more than we grant to Germany, and what about France, Austria and other countries?

NEW WORKS.

In a large number of cases foreign patentees are arranging to have their patents worked on a royalty and English manufacturers can now play the part those of Germany have hitherto played, that is, pay only a small royalty. If the patentees will not come to terms, and will not put up their own works in England, then the patent may be revoked and the British manufacture get it for nothing.

In some few cases foreign firms have already acquired land and are erecting, or have erected, works in England. These have been mentioned in previous issues of this magazine.

There are many other American and German large firms, including manufacturers of ramie yarn and raw silk, in active negotiations for sites who are influenced in their intention to settle in England mostly on account of the patent law, but who also have an eye to the 15 per cent. tariff rebate which some British colonies give to British manufactures. Some of these firms, while negotiating for sites, will probably never take them; they are waiting to see with what pressure the Act will be applied, as many think any reasonable excuse will obviate manufacturing in England. Of the same order are other manufacturers who are obscurely advertising in unimportant trade papers patents for sale or to be worked on royalty. It is believed these are intended to be used a few months hence as evidence that the patentees have been desirous of having their patents worked in England, but have not received any business offers to do so.

Again some firms are even going to the length of simply having made in this country odd parts of machines or apparatus which are the subject of recent patents, but are having made abroad and imported the bulk of the machine on which the patent rights have expired. The manufacture in this country may therefore in some cases be confined to odd parts of machines and the assembling of the parts together. We mention this to show that every step will be taken to obviate manufacturing in England until the owners are absolutely compelled.

There is one important point in which our new patent law differs from the compulsory working clauses as enacted in other countries such as Germany, France, Austria, etc. In these countries the patentee is compelled to work his patent within three years; by the English new Act the patentee is not tied to three years or even to any specified time. He runs no risk of forfeiture of his patent by non-working, so long as he does not work the patent anywhere else.

It will be of interest to your readers to know that every industrial country in the world, save one, has now a proviso in its patent laws that a patent may be revoked if now worked in the country granting it. That one exception is the United States of America.

THE LAWRENCE TEXTILE SCHOOL.

The Lawrence Industrial School opened October 19 with a registration of over 900 male and 600 female students. It resumes its classes with the assurance of another successful year. It was established under the Industrial School Act, and opened last year with evening and day classes for those already engaged in the trades. The object of the school is to provide practical education by which the industrial worker may meet his daily needs. It was such a school that Lawrence lacked until a few years ago. The deficiency has been supplied with a speed and on a scale of which no one dreamed. Lawrence and surrounding cities and towns are now provided with the means of educating in a systematic manner their large number of textile and metal workers. No entrance examinations are held, the only qualification being that the applicant for admission be an operative. The school is free. Text books are edited by the instructors, and printed by the commission. The problems, drawings and notes come from the shop, so that the school keeps in touch with the industries. These notes and problems are obtained by means of a question box. The instructors are practical men, working in the industries and conversant with the needs of the operatives.

A certificate is awarded each person completing a course. Day classes are formed for the convenience of those who are unable to attend the evening sessions.

The school is well equipped, having $32,000 worth of the most improved woolen, worsted and cotton machinery.

Classes in the following subjects will be formed for both day and evening pupils: Woolen and worsted spinning, woolen and worsted weaving, woolen and worsted finishing, dobby and jacquard weaving, cotton spinning, cotton weaving, loom fixing and loom calculations, mill arithmetic and mill bookkeeping, elementary and advanced textile designs, elementary and advanced cloth calculations, industrial and commercial electricity, steam engineering for firemen, steam engineering for engineers, arithmetic for firemen and engineers, blue print reading, machine drawing and arithmetic for machinists, shop arithmetic, industrial and commercial chemistry, experimental and practical dyeing and dressmaking for working girls.

The courses of woolen and worsted manufacturing are arranged to meet the daily needs of those working in these industries. Instruction is given in all the various processes employed in adapting the wool fiber to the cloth—sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing.

The cotton courses are designed to give instruction in the various departments of the industry—picking, carding, drawing, roving, spinning, combing, designing and weaving. There is also a course in knitting.

Instruction is given in chemistry, dyeing and printing in a building located on the banks of the Merrimack, just above the falls, away from the class rooms and dwellings. It is modeled after one of the best experimental laboratories in the country.

The following is a list of the instructors:

Henry Hartwell, Engineer, Washington Mills. Steam engineering.
John Brouder, Designer, Wool Mills. Designing.
Wm. E. Helliwell, Designer, Washington Mills. Mill arithmetic and cloth calculations.
H. J. Willgeroth, Pattern Weaver, Washington Mills. Weaving.
James Patterson, Overseer, Washington Mills. Loom constructions.
A. L. Fulperson, Mechanical Engineer. Arithmetic for engineers.
Jos. White, Jr., Mass. Institute of Technology. Arithmetic for engineers.
Willard Lewis, Engineer, Arlington Mills. Arithmetic for engineers.
C. N. Colpitts, Designer, Stanley Mfg. Co. Blue print reading and arithmetic.
T. Crowther, Overseer spinning dept. Worsted spinning.
T. J. Livesay, Overseer carding dept. Cotton spinning.
D. Buchan, Asst. Supt. Stevens Mill. Loom construction.
Wm. Coyle, Electrician, Arlington Mills. Electricity.
Warren Moran, Chemist, Pacific Mills. Chemistry.
Frank Mason, Experimental Dyer, Washington Mills. Dyeing.
Nellie Welstead, Mary R. Byrne, Annie Hilton, Grace Hanrahan, Annie Dube, Nora Sullivan, Mrs. Margaret F. Morrisey, Julia Mahoney. Sewing and dress making.

LICENSED COTTON WAREHOUSES IN THE SOUTH.

A special committee of fifteen members of the New York Cotton Exchange has recently made the following report on the plan for extending the certificate system to warehouses in the South. The report does not commit the Exchange to the adoption of the plan, but is submitted for consideration and whatever action may be decided upon:

The Certificate System shall be extended only to warehouses situated in the interior towns in the Cotton Belt of the United States.

We earnestly urge the licensing of warehouses only at interior towns in the cotton growing belt, especially where the uncompressed cotton comes in quantity to market. There are two decided advantages to be gained by limiting the certification in this manner instead of including Southern ports and places outside of the cotton growing districts.

1st. At the interior points the least amount of carrying, etc., charges is added to the cost of the bale (often none at all), and the buyer can have it shipped thence direct, on through B/L, to any destination, by whichever route he prefers. Or he can leave it stored there till he is ready for it.

2nd. We must get at the bales as near the plantation as possible, so as to sample and examine them before they are compressed. In this condition our inspectors can examine every bale so thoroughly that false packs, mix packs, sand, dirt, country damage, gin-tag, etc., cannot escape detection (as they too often do in compressed bales).

When bales have been thus passed, after a thorough examination, they will be compressed tightly, and with our certification and guarantee those bales can pass from hand to hand, and need never be cut or sampled till they are broken open at the mills. This will save the losses arising from repeated samplings, bagging torn off, pilfering from sample holes, and being rolled in the dirt. Our certificated bales can be delivered to railroad or steamer in the same good condition as the East Indian and Egyptian bales are and in like manner to the mills. The present disgracefully torn and dirty condition of our bales is the just cause of bitter complaint by the spinners both here and abroad, and the loss by this foolish and needless waste is great. It can be saved by certification in this manner to the great benefit of the whole trade.

After a plan for extending the Certificate System to Licensed Warehouses in the South shall have gone into effect, it shall be optional with the seller to deliver cotton on contract either in the City of New York or in any Licensed Warehouse in the South, as hereinafter provided for.

The Extension of the Certificate System to the South shall go into actual effect beginning with contract deliveries in the month next succeeding the last month traded in at the time when all details shall have been arranged. In accordance herewith, the Board of Managers shall designate and make known to the members the first month to which Certification in the South will apply.

INSPECTION.

When one or more warehouses in the South shall have been licensed by the Exchange for handling certificated cotton, the Board of Managers shall provide means and ways for inspecting and sampling cotton in the South, in a manner thoroughly efficient, but with careful regard to the greatest economy for the Exchange.

For this purpose it shall pass appropriate Rules and Regulations with power to amend them as conditions from time to time may require. It shall be within the discretion of the Board of Managers to make use of the services of any or all of the New York inspectors, either in a traveling capacity, or as resident inspectors, or it may engage one or more permanent inspectors at any one place. Every inspector, whether traveling or locally resident, who shall at any time be called upon to perform duty outside of New York, shall have been previously bonded to the Exchange for the proper and faithful performance of his duties. In providing for inspection in the South, the Board of Managers shall make arrangements therefor in a manner such, that a member may have 100 bales of cotton inspected and sampled for certification within not more than three business days from the day on which the Inspection Bureau receives notice to inspect and certificate such cotton.

The Board of Managers shall obtain an exact copy of the resolutions and other acts passed by the International Cotton Congress at Atlanta, Ga., in October of 1907, relating to the handling, packing, wrapping, sampling and other physical features desirable in a bale of cotton in course of marketing. It shall thereupon pass rules and regulations imposing these recommendations, as primary conditions, upon all cotton submitted for certification; with such modifications, if any, as may be considered advisable in order not to restrict unduly the volume of certification.

The Board of Managers shall provide for the licensing of local weighers and compress companies, if compresses are conducted separately from the licensed warehouse companies; and shall further provide for the employment of such clerical and other labor as may be required for the expeditious and economical performance of the work incident to inspection in the South.

When requested to do so by a member, the Cotton Exchange shall, through its Inspection Department, engage a licensed weigher to act for the member whose cotton is to be inspected and weighed.

As each lot of cotton is inspected in a Southern Licensed Warehouse, the samples thereof shall be promptly forwarded by express to the Inspector-in-Chief in New York City in a manner similar to that which now obtains between the warehouses and the Classification Bureau in New York. All samples for certification which are drawn in the South shall be forwarded to the Inspector-in-Chief exactly as they have been drawn, and shall not be in any way trimmed or prepared previous to being shipped to New York.

The Board of Managers shall provide ways and

means for the checking in duplicate of all lists of samples, marks of the bales, etc., at the time of inspection in the southern warehouse, in order to reduce to a minimum the possibility of error in issuing a Certificate of Grade.

WAREHOUSES.

As soon as the modus operandi of certificating cotton in the South shall have been provided for in all its details, the Board of Managers shall cause to be distributed to the persons interested, a list of the conditions with which a warehouse in the South will have to comply in order to be eligible for handling certificated cotton.

Before a license is issued to any warehouse in the South, a committee of three members of the Exchange, the chairman of which shall be a member of the Board of Managers, shall visit in person the warehouse making application; it shall carefully inspect the plant and general business of such warehouse, and shall obtain such other information as may be of value for the Board of Managers in forming a correct opinion as to the eligibility of the warehouse in question. The committee appointed for this purpose shall make a full report to the Board of Managers in writing.

Every member of the Exchange shall be kept duly informed through the Superintendent's office by means of individual notice of the exact name and location of every licensed warehouse and of the period during which its license shall be in effect.

Warehouses in the South shall meet the following conditions in order to obtain a license for handling certificated cotton: They shall be bonded to the New York Cotton Exchange for the proper and faithful performance of their duties in an amount equal to ..... per cent. of the amount of their capital. They shall have a capital of not less than ..... Dollars per bale of storage capacity; the total capital in no case to be less than ..... Dollars. The warehouses to be licensed must specifically agree to abide and be governed by all by-laws, rules and regulations of the Exchange, and such warehouses only shall be licensed by the Exchange, which work in direct connection with some compress, and, whenever practicable, inspection and sampling shall take place before compressing of the bale.

The warehouse companies shall store certificated cotton in such a manner that all bales are at all times easily accessible; they shall furnish for the use of the Inspection Department, a room within the warehouse limits, which shall serve as a storage room for samples awaiting shipment to New York and for other similar purposes. The warehouse companies shall guard such rooms from all irregular entrance and shall be held responsible therefor by the Exchange under their bond. One or more properly authorized representatives of the Inspection Department or members of the Exchange otherwise specially empowered by the Board of Managers shall be the only persons allowed to enter and handle samples and other property of the Exchange stored in such storage rooms.

The arrangements for storage and labor "in" and "out" shall be substantially the same with regard to Southern Licensed Warehouses as they are in New York.

The means of effecting insurance shall be optional with the owner of cotton in Southern Licensed Warehouses.

The form of Warehouse Receipt to be used by all of the licensed warehouses shall be identically the same and shall be published and copyrighted by the New York Cotton Exchange, and the books containing such blank warehouse receipts shall be purchased by the respective warehouse companies directly from the New York Cotton Exchange. Each warehouse company shall, immediately upon receipt of cotton consigned to a member for the purpose of certification, issue a warehouse receipt either through its own agency or through an authorized agent in the City of New York, to the member, either at his office or to his authorized agent in the City of New York. In case such member has neither an office nor an agent authorized for the above purpose in the City of New York, the New York agency or agent of the warehouse company shall forward the warehouse receipt by registered mail to the main office of the member for whose account such cotton has been received. The warehouse company shall communicate with its New York agency or agent by telegraph for the purpose of issuing warehouse receipts, in order that the member of the Exchange may come into possession of his cotton immediately it has arrived at the Licensed Warehouse.

The warehouse companies shall be prepared to ship certificated cotton upon demand of the member of the Exchange who may be the owner thereof (or his authorized agent) at a cost not to exceed ..... per bale. Against surrender of the negotiable warehouse receipts for the purpose of shipments from the South, the member of the Exchange who surrenders it, shall receive from the warehouse company a temporary receipt, which he shall thereafter return to the warehouse company upon delivery of a proper Bill of Lading. These arrangements shall be effected between the member and the agency or agent of the warehouse company in the City of New York; and in case of non-existence of an office or authorized agent of the member in the City of New York, the exchange of documents shall take place in the manner provided for the exchange of Warehouse Receipts. Licensed Warehouses shall serve notice on the Inspection Bureau of at least ..... days of any intended change in the rates for storage, labor or fees for shipping cotton, and individual notice thereof shall be promptly sent to every member by the Exchange.

The duly authorized officers of every Licensed Warehouse Company shall have the privilege of the floor of the New York Cotton Exchange, for the pursuit of their regular business as officers of such Licensed Warehouse Company, and for no other purpose whatsoever, during a total of not more than thirty days in each year. Such privilege of the floor may be made use of continuously or at different periods of the year and shall apply to the officers of each Licensed Warehouse Company collectively, and not to each individually. The Committee on Membership shall have the power to extend such privilege of the floor beyond a total of thirty days in any one year, within their discretion, upon proof of proper reason therefor.

If any State or other civil authority shall pass

laws or regulations, which in the judgment of the Board of Managers are unjust or too burdensome upon the cotton business, the Board of Managers shall have the power to cancel any or all licenses of warehouses within such State or Municipality, subject to the provisions in the by-laws for cancelling licenses. In such case the certificated cotton thereby affected may be transferred to another Licensed Warehouse capable of storing such cotton, under the supervision of the Cotton Exchange authorities and at the expense of the Inspection Fund. The Inspection Fund to be liable only for the least expense necessary for such removal. But the owner of the cotton may arrange with the Inspector-in-Chief (or the Warehouse and Delivery Committee) to transfer to any other Licensed Warehouse, he paying the additional cost and charges therefor.

Each licensed warehouse shall make a weekly report of the certificated cotton it has in store in accordance with the requirements of the Committee on Information and Statistics and on such day of each week that the information may be embodied in the weekly reports issued in New York.

At stated intervals a committee shall be appointed by the Board of Managers, who shall visit in person each Licensed Warehouse which is at that time handling certificated cotton; such committee shall make a careful and detailed inspection of the plant and business methods of each warehouse, and shall obtain all such other information as may have any bearing upon the business which it conducts under a license from the Exchange. Immediately after completion of the tour of inspection the committee shall report their findings in writing to the Board of Managers, who thereupon shall give such report immediate consideration. The members of the committees which may from time to time be appointed for the purpose of examining licensed warehouses in the South previous to the issuing of a license, as well as the members of the committee, shall be reimbursed by the Exchange for their actual expenses while performing duty on such committees outside of the City of New York.

ALLOWANCES.

For each lot of cotton delivered in a Southern Licensed Warehouse, the seller shall make an allowance to the buyer of an amount equal to the freight charge for each bale at the rates prevailing between such southern point and the City of New York and any other necessary shipping charges. For this purpose the Board of Managers shall obtain all such rates and charges existing between each point in the South at which there may be a Licensed Warehouse and the City of New York; in accordance with the information thus obtained the Board of Managers shall fix the exact allowance which shall be made by the seller to the buyer and shall make such changes therein from time to time, as the changes in freight rates and other necessary shipping charges may require. The Superintendent shall inform every member promptly by individual notice of all allowances, as fixed by the Board of Managers, for such charges, and of all changes which occur therein. Whenever there shall be different rates obtaining for freight and other necessary shipping charges between any point in the South at which there is a Licensed Warehouse and the City of New York, the lowest rates shall be fixed as the allowances which the seller shall accord the buyer in delivering cotton on contract at that point in the South.

CERTIFICATE OF GRADE.

All samples forwarded to New York for certification shall be classed, and a Certificate of Grade issued therefor in the regular way by the Inspection Bureau.

Not less than a full contract of 50,000 lbs. in about one hundred bales of cotton shall be deliverable in a Licensed Warehouse in the South.

The cotton delivered on each separate contract in any Licensed Warehouse in the South shall consist of not more than three contiguous half grades of the total range of grades deliverable on contract.

In delivering cotton on contract in a licensed warehouse in the South, the seller shall attach to the delivery notice an exact copy of the grade certificates he will tender on such delivery.

The Inspection Bureau shall deliver the Certificate of Grade to the member of the Exchange either at his office or to his authorized agent in the City of New York. In case a member has neither an office nor an agent authorized for the above purpose in the City of New York, the Inspection Bureau shall forward the Certificate of Grade by registered mail to his main office.

The Inspection Bureau shall hereafter not class any cotton, other than for purposes of certification, either for members or for non-members, for less than the fee charged for certification.

COTTON GROWING IN HAWAII.

An effort is to be made to develop cotton growing in the Hawaiian islands. The U. S. Government experiment station in Hawaii has for several years been testing the possibilities of the islands for growing cotton and the results have been such as to warrant the planting of a large area this season. Five hundred acres on the island of Kanai are to be planted with sea island seed, the proprietors of the plantation being extensive sugar planters. In addition to the advantage of diversifying the products of the islands, it is believed that cotton growing will, by the rotation of crops, reduce the quantity of fertilizer required for the land when given up entirely to sugar.

The manufacture of the Paisley shawl, which began in 1820, was an attempt to imitate successfully the Indian cashmere shawl by producing effects on the loom which in the cashmere shawl were made with a needle.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

RIBBON WEAVING.

BY OTTO BOTH.

(Translated from the German Work, Die Bandweberei.)

TAFFETA WEAVING.

Taffeta is a term used in ribbon as well as broad silk weaving to designate the weave shown at Fig. 1, regardless of the yarn from which the ribbon may be made. In linen, cotton and woolen weaving this weave is variously known as a cotton or plain weave. It is the simplest and closest weave, half the

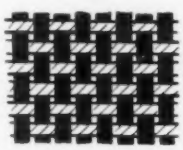


FIG. 1.

threads being raised and the other half lowered at each pick. At one pick all the odd threads will be raised so that they lie over the filling threads, the even threads being down below the filling. At the next pick the odd threads are lowered while the even threads are raised. At the third pick the warp threads occupy the same position as at the first one, the shafts at the fourth pick being the same as at the second. Thus the woven draft covers two warp and two filling threads, being the smallest possible weave pattern.

Fig. 1 shows the intersection of the warp and filling in a plain weave. All the warp threads that are raised or lowered at one time can be drawn on one harness. Thus two harness are required for the plain weave, one for the odd threads and one for the even. Usually, however, four harness are used with a straight draft. When shafts 1 and 3 are raised, 2 and 4 are lowered and vice versa. In forming the shed one shaft is raised a little earlier than the other. This has no effect on the weave except that the threads are separated and more uniformly distributed, giving the cloth a closer appearance.

When weaving closely set fabrics, 6, 8, or

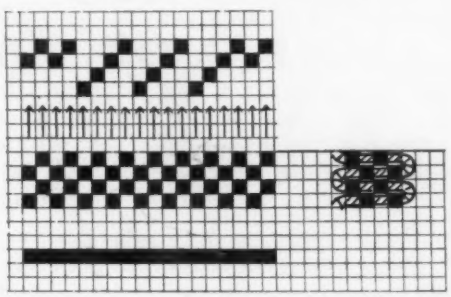


FIG. 2.

even more shafts are used for plain weaves in order to reduce the friction of the warp threads against the reed next to the selvage. A plain weave can be woven with the draft 4, 3, 2, 1 or 1, 4, 2, 3, instead of the straight draft and without changing the effect.

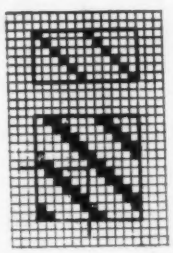


FIG. 3.

Fig. 2 shows the taffeta weave and draft for an 18 end ribbon. The intersection of the threads is shown at the right and the harness draft at the top. Shafts 1 and 2 carry 3 threads each, shafts 3 and 4, 6 each.

TWILL WEAVES.

Twill weaves form diagonal stripes. The warp and filling intersect one another over long patterns, forming a softer and slazier fabric than is obtained with the plain weave.

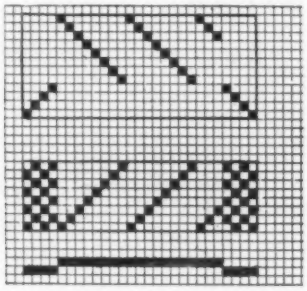


FIG. 4.

The smallest twill pattern has 3 threads which may be woven 2 up 1 down or 1 up and 2 down. At each pick the twill is set one thread to either the right or left, producing the distinctive diagonal effect of a twill and causing it to run either to the right or the left.

VARIETIES OF TWILLS.

One-sided Twills. In this class of twills there is either more warp and less filling exposed on the face of the cloth, or the reverse is the case, there being less warp and more

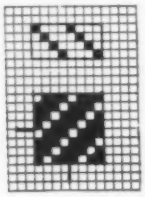


FIG. 5.

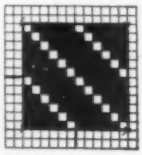


FIG. 6.

filling. In either case there is a marked difference between the appearance of the face and back of the cloth. This class of weaves may be divided into four principal groups: filling twills, warp twills, effect twills and fancy twills.

In filling twills only one warp thread is raised in each pattern, the others being lowered and the filling passing over them. Thus the filling predominates on the face of the goods.

Fig. 3 shows a 3-leaf filling twill running to the right. The pattern covers 3 warp and 3 filling threads.

Fig. 4 shows a pattern for a ribbon woven with an 8-leaf filling twill in the body of the fabric and a taffeta weave at the sides. Because of the unequal take-up of the two weaves, a separate warp beam is used for each. The shafts for the plain weave are placed in front of those used for the twill. As

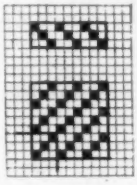


FIG. 7.

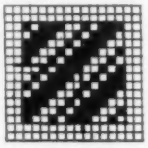


FIG. 8.

the front shafts need not be raised as high as the back shaft, the former are used for the weave with the greatest number of intersections and which consequently are subjected to the greatest strain in weaving.

Warp Twills. In these weaves only one warp thread is lowered in each pattern, the others being raised over the filling thread.

Fig. 5 shows a 4-leaf warp twill running to the right.

Fig. 6 is a 6-leaf warp twill running to the left. It is customary to weave warp twill ribbons with the face down, forming a filling twill exposed on the upper or back side. This reduces the number of shafts to be raised. For example, in weaving a 6-leaf warp twill with the face down it is necessary to raise only 1 warp thread in 6 at each pick,

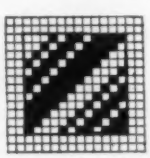


FIG. 9.

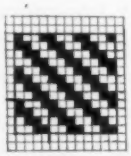


FIG. 10.

instead of raising 5 out of 6 as would be necessary if the cloth was woven with the face up. The last method would require more power and subject the warp threads to greater strain. Care must be taken when weaving ribbon with the face down to have the twill running in the desired direction when the cloth is reversed.

Effect Twills. These are formed by raising a group of threads and lowering an adjacent group, the two having an unequal number of threads. The narrowest twill of this kind is a 5-leaf weave which may be woven either 2 up and 3 down or 3 up and 2 down. Fig. 7 is a 6-leaf effect twill running to the left and woven 2 up and 4 down.

Fancy Twills. These are formed by a combination of 2 or more twills to produce fancy effects. Fig. 8 shows a 7-leaf twill of this class woven 3 up, 2 down, 1 up, 1 down. Fig. 9 is a 12-leaf fancy twill woven 4 up, 3 down, 1 up, 1 down, 2 up, 1 down, the pattern covering 2 warp and 12 filling threads.

(To be continued.)

SOME WOOL SUBSTITUTES.

BY T. H. FITTON.

(Before the Huddersfield (Eng.) Technical College.)

A little over 60 and probably not more than 70 years ago saw the beginning of what was now an enormous trade. It is not known who really originated the trade, but a man named Naylor, who came from Morley, near Leeds, was known to have been pulling rags in Germany in 1846. In 1850 practically all the large mungo and shoddy firms on the Continent had begun business, so the growth of the trade was very rapid.

At the present time upwards of 700,000,000 lbs. per annum were used in this country alone. Thirty years ago, when the importation of mungo and shoddy was at its height, the quantity was reckoned by thousands upon thousands of bales a month, whereas last year the total amount of pulled material imported was only 3,306,562 lbs., so that there was one trade at any rate where the Englishman had actually beaten the foreigner out of existence.

Who first used mungo and shoddy (or artificial wool, as the French call it) was not definitely known, but these materials were the basis of the Colne Valley trade, and he had no hesitation in saying that it would be utterly impossible to make the required quantity of cloth out of pure wool alone.

The trade in these substitutes was largely confined to the West Riding of Yorkshire, within a radius of not more than 40 miles, and the West Riding woolen trade employed about one-third of the total number engaged in the woolen industry.

The whole of the civilized world, and some parts that were not regarded as civilized, were laid under contribution to supply the demand for rags. He had seen a map about eight feet square, covered with flags, indicating the places from which rags came, and it formed an interesting picture of the geography of the rag trade.

The total importation of woolen rags and pulled shoddy into this country last year was 113,423,418 lbs., and the estimated quantity of mungo and shoddy pulled in this country each year was about equal to the total importation of wool. Last year this was 759,236,745 lbs. If they could imagine that to be gallons instead of pounds it would take Blackmoorfoot reservoir to hold it all.

In Dewsbury something like 10,000 bags of rags were sold by auction every week, the estimated value of these being at least one million pounds sterling per year, and the amount in this way was only a very small proportion of the actual business done in rags.

He then referred to the interesting question of the effect of handling woolen rags with regard to the transmission of infectious disease. Rags were divided into two classes —new and old. New rags were those which came from the tailor's shops, and old rags came from garments which had previously been worn. It seemed as though there might be considerable danger arising from the latter, but the fact was that there was no case on record of any transmission of infectious disease from rags in the whole history of the trade. Some years ago there was a great plague of cholera on the Continent, and the Board of Trade took the very drastic step of prohibiting absolutely the importation of woolen rags for fear of transmission of the plague. Representations made to the authorities were however ineffective in getting the order repealed until the violence of the plague had subsided, which fortunately was not long after. Something like 13,000

bales, which had been stored up at the ports, came in under two months, and there was again no case of disease.

The quality and condition of the rags indicated the degree of prosperity of the countries from which they came, the best and least worn coming from the most prosperous, and vice versa. The state of cleanliness also indicated to a certain extent the health of the countries from which they came.

Now when they had got the rags, the question was what to do with them to turn them into wool substitutes. Old rags were divided into mungo rags and shoddy rags. This division was necessary, as mungo came from hard milled cloths, whereas shoddy came from goods of a soft character, such as shawls, comforters, knitted goods, stockings, etc. Rag sorters were generally looked down upon as a low type of being, but it required a fair amount of intelligence to be able to discriminate nicely between the different qualities of rags. It was not so much a question of looking at them as of training the fingers to the touch so as to be able to sort them almost blindfold for quality. Of course when it came to sorting for color good eyesight was an absolute necessity.

Before sorting, however, the rags were shaken. This extracting of the dust was advisable for two reasons. First, it was easier for the sorter to deal with clean rags, and second, it was better for the employe's health.

If the rags were intended to be carbonized, the first shaking was dispensed with and they went straight to the carbonizer. Carbonizing was done to extract the cotton. For carbonizing rags the dry process was almost universal. The rags were placed in a drum which revolved very slowly. Inside were a number of teeth which gradually broke up the rags so that they did not roll into a ball. Hydrochloric acid gas was introduced at a high temperature, the result being that all vegetable matter was transformed and destroyed. It was a matter of very careful calculation to take the rags out just at the proper time, otherwise the subjection of the woolen fibers to the heat longer than was necessary interfered with the value of the material. If the rags were imperfectly neutralized they would have a harsh handle.

After the rags had been finally shaken they were taken to the sorting room to be classed into the various qualities and shades, which might easily run into hundreds. He himself had known 40 different shades of black. Having finished sorting, the rags went forward to the pulling room. Oil was necessary to the proper manipulation of the rags, and, speaking from a long experience there was no self-respecting manufacturer who would use poor oil, as he could not get the same result as from good oil.

The rag pulling machine had remained practically unaltered from the time of its introduction.

The rags were laid on a traveling lattice, by means of which they were carried forward between two sharply fluted rollers on to the swift, which revolved at a speed varying from 350 to 1,000 revolutions per minute, according to the material. The standard modern swift was 18 in. wide, and the number of teeth in that width varied from 16 to 70. The diameter was 42 in., and the total number of teeth from 4,000 to 25,000.

The great damage done to the rags in pulling was caused by the heat and friction in the tearing apart of the woven threads, and it was that which largely interfered with the milling property of the pulled material which had not been through the carbonizer. The art of making mungo and shoddy to the best advantage was in retaining its milling properties, and therein lay the whole skill in manipulation.

The use of mungo and shoddy had revolutionized the woolen trade, the intelligent use of these materials being largely responsible for the clothing trade in the Colne Valley. Unless people were content to do with half the quantity of clothes they at present wore there was not enough wool produced to go round, and so it was necessary to use these reclaimed materials to fill up the vacancy.

He had never felt that he had any reason to be ashamed of his business, which was the shoddy trade, as it is generally termed. Shoddy, as understood by some people, meant deceit, but there was no deceit about it, as it was sold and used as reclaimed material.

ENGLISH NOTES.

(By Our Special Correspondent.)

Textile trade is in a poor way because of the cotton strike and the lack of confidence in wool values. Otherwise general trade might be said to be looking up. The iron trade is much busier, new shipbuilding orders are in, imports are increasing, exports are better than for six months. Given a timely end to the cotton strike, business men at large see no reason why there should not be a swing back to good trade by New Year's. There is unquestionably a better feeling which is not dashed by the complications in the near East.

* * *

The drawn blinds in the Lancashire mills and the smokeless chimneys make a memorable sight. The mills are idle because the cardroom operatives' officials were reluctant to take a second ballot on a proposed reduction of 5 per cent. in wages next January. Production has been stopped to some purpose. The idleness of 400 mills,—300 of them in Oldham,—with their 40,000,000 spindles, is an accomplished fact and idleness is creeping over 800,000 looms. The 120,000 now out of work may swell not improbably to 400,000 and one can guess in part what this means.

It means forfeiture of some markets permanently and misery and anxiety in all subsidiary North of England trades. It means living on $3 a week to the out-of-work spinners, on $2 to card room hands and on Distress Committees to any number of carters, packers, boiler men and others. Production needed a rest, but not the cataleptic rest it is having. The strike is a bitter bungle, costing—or about shortly to cost—$1,750,000 each week in wages alone. And the supreme irony is that the employed are largely their own employers as stockholders in the several mills. Operatives' capital financed the new mills responsible for much of the overproduction and their looms and purchases of shares have kept going scores of old mills.

* * *

Outside Lancashire, doublers are at a standstill for want of cotton, worsted looms are "playing" for warps, business is being turned away by the penny or two per pound extra which consumers will not spend. The livelihood of 30,000 laceworkers in Nottingham is in sore jeopardy. With it all there is perfect order. The cotton hand, if he chooses his battles like a fool, can carry them through like a stoic. The union funds are spent without turning a hair and grimly the strikers return to work to pinch themselves once more to refill the war-chest. The humor and the advantage of it all should appeal especially to the oversea competitor. The rights of the case are rather unimportant at this stage of the struggle, but there has been justification offered for the attitude of mill directors. For reference be it noted that an analysis of the balance sheets of 100 Oldham companies going back for 24 years shows the average profit to have been 4.8 per cent. per annum. In six of these years not one of the concerns in point made a profit and only piled higher their losses.

* * *

Recent results of the Patents (compulsory working) Act include the acquisition of a Birmingham site by a firm of Swiss watch case makers. One or two American machinists are looking at sites in the Midlands. A German oil-stove firm sending 15,000 stoves per annum into England has arranged for manufacture under license here. The oddest development thus far reported is the formation of a piratical company to seize and work the patents that foreign holders have failed to protect, but of this little is yet known. Estate agents complain now that some foreign patentees are scheming to elude the Act by taking very small premises in which manufacture could not be conducted in any adequate way. We are still without authoritative knowledge of the meaning of the "adequate working" prescribed by the law and the information can come only out of a sequence of law cases.

* * *

One of the evidences that the dye on khaki drills is good occurs in the garment-making process. A fabric that is woven close and contains a good proportion of salts of iron

makes sewing-machine needles red-hot. Soap and water applied upon the sewing thread is used to lubricate them. The test that dyers and the Manchester Testing House approve for the fastness of khaki dye is a comparative one. You treat a standard pattern and the one it is desired to prove with a 3 per cent. carbonate of soda solution hot, followed by 3 per cent. hydrochloric acid cold. The depth of the green stain attests the presence of chromium. Iron is discovered by the ordinary chemical means after the pattern has been reduced to ash. The harsh handle of standard fast khaki is itself some evidence of the presence of liberal quantities of iron.

However, this is not the test for fastness of color that the British War Office imposes. Specifications say that the color must stand washing in soap and water, exposure to sun and air, boiling in soda and water and steeping for 24 hours in a 10 volume solution of hydroxyl diluted with twice its weight of water. Further, the drill has to be piece-dyed exactly to the shade of the official pattern.

Of even greater importance is the factor of strength. It is required of army khaki that the breaking strain be not less than 600 lbs. in the warp direction and 400 lbs. in the filling when tested on Goodbrand's machine, 4 by 9 inch gauge.

Khaki serge (woolen) is to withstand 430 lbs. warp and 400 lbs. filling on the same machine, but the gauge, i. e., the cloth between the jaws of the apparatus is to be 6 5/8 by 9 inches. As to the dye of army serge, it is stipulated simply that it shall be similar to that of the sealed pattern approved.

* * *

A stockinette firm, T. & J. Tinker, Holmfirth, Huddersfield, offer a new solution of the jute-in-wool nuisance. They have evolved a lining-bag knit from coarse wool and costing some 28 cents which withstands press-packing and preserves the contents from the touch of jute. The argument is that use of the lining enables the shipper to use the cheapest of packs safely and as the lining is quite worth 12 cents for pulling after it has fulfilled its first purpose, the actual extra cost of tares would be a very slight matter. The Australians have intimated at several times that they do not propose to pay the full price of improved tares, and the practical problem is, therefore, to improve tares without cost or at a low cost which seller and buyer can agree to share.

* * *

The income of the Bradford conditioning-house for the last twelve months exceeds $78,000 and the profit, $8,000. Managers of the European conditioning houses have been meeting, comparing notes and considering means of attaining uniformity in their methods. At Bradford some interesting observations are being taken upon actual—as opposed to conventional—regains. Samples numbering 147 are being weighed to a nicety daily for a year. The variations will be scrutinized closely and the experience gained will be of influence in determining whether our standard allowances for moisture are to be changed to items more in accord with averages found in practice. In any case the facts will be valuable.

* * *

Wood construction in spinning mills has suffered another blow from the collapse of Ira Ickringill's branch mills at Bradford. Here was a six-story mill built by day labor in the most substantial manner 35 years ago. Just as the help had gone to dinner the top floor sank under a weight of 40 to 45 tons of wool, although it was constructed to carry 75. Floor after floor gave way until there was a solid pack of wool and machinery two stories deep in the bottom of the shell of the stone building. The beams of the top floor had rotted without ever giving indication of weakening. The time of the accident precluded loss of more than one life.

* * *

The holiday character of the annual gathering of the Associated Chambers of Commerce, which is as near an approach as we have to the Manufacturers' Conventions of America, distresses some serious business men. This character is promoted by annual changes of the place of meeting and especially by meeting in uncommercial centres. If Manchester gets its way all future as-

semblies will be in London. The Chambers do not suffer from advertisers' attention. Their afflictions are fads and bores and programs absurdly long for the time at disposal.

* * *

Steps to educate Lancashire in the advantages of electrical driving have been taken by exhibitors at the Manchester Electrical Exhibition. A motor and gear attached to a ring frame is adjusted to maintain an equal tension upon the thread throughout the upbuilding of the cop. The speed variation, which necessarily differs for varying counts of yarn, is effected by a cam and adjustment acting upon the brushes of the commutator. This is Brown, Boveri & Co.'s patent, London. There are other electrically worked ring frames and winding frames for tight winding on tubes for hosiery. Motors also drive looms and patent cloth-folding machines. Textile England is undeniably interested in electric drives albeit not altogether convinced of the superior economy of them.

* * *

Taking anybody's estimate, woolcombers' wages constitute a blot on Bradford's civilization. Union officials say the average wage of the adult male is $3.38 weekly. A Socialist councillor who took a census of some 300 families in 1906 found the average to be $3.77 of which $1.00 went in rent. Government returns put wages of washers, scourers and dyers at $4.35 to $5.31, and of combers at $4.83 to $5.55 for full weeks. Broken time and casual employment being common, the actual receipts are of course less than full nominal pay, and as a maximum rarely attained we have winders of three combs drawing $7.25. On these receipts how is a man to rear four children when the bare cost of family life is $6.28 weekly? What of the miserable "maker-up" whose full pay is $3.60 to $3.85?

The trade gets the men it pays for—physical and moral wrecks, jailbirds, idlers and drunkards—with, of course, a sprinkling of decent men driven by misfortune into this last ditch and a liberal percentage of shiftless ones.

Wool men in Bradford have had to set to right one of the colonial South African Governments on a question of sheep-dip. Falling into a common error the Department argued that no harm is done by using caustic soda in dipping sheep if only the solution is weak. The soda is so destructive of wool in hot and strong solutions as to dissolve it completely. Applied cold the alkali makes wool brittle and harsh and no matter how dilute the mixture the surplus water evaporates, leaving a deposit of this deleterious chemical upon the fleece.

* * *

A Canadian has been comparing the profits put on woolen goods by wholesalers here and in Canada. By his account the Canadian jobber buying to stock and selling to tailors sells a $1.50 cloth at $2.25 unless he is a keen cutter, in which case he may ask $2. The traditional practice in this country is 9 pence (18 cts.) a yard narrow, 18 pence (36 cts.) a yard broad; or say $1.85 for the goods costing $1.50. Jobbers' cutting takes the form of selling for 4 to 10 cents a yard, fancies costing from 75 cents to a dollar. Traveling expenses are lighter here, but it is to be questioned whether there is any great advantage in the matter of bad debts. Of course for export woolens are bought for orders, not for stock and are sold at a low commission.

Of the cotton crop of the world for the year 1906, 19,900,000 bales in round numbers, the United States furnished 13,000,000; British India, 3,700,000; Egypt, 1,400,000, and all other cotton producing countries, 1,800,000 bales. Of the cotton imported by Germany in 1907, 68.1 per cent. was from the United States.

The total number of employes during the last quarter of 1907 in Cologne was 309,353, which increased to 320,435 in the first quarter of 1908. The wages paid during same periods amounted to $29,342,322 and $29,122,169, a decrease, in spite of the increased number of employes, of $220,154.

WOOL CARDING AND CARDING MACHINERY IN EUROPE.

BY GUNNAR NILSSEN,
Aalgaard pr Stavanger, Norway.

(Continued from October.)

Commission spinning is not very lucrative, and work has to be done very economically to meet the competition from the larger mills. The German commission spinner does work economically. He has the advantage of long hours and low wages. You don't find him wearing a collar and necktie around the mill. The good old times when fortunes were made by the Saxon "Vigogue" spinners are now no more. Hours are now shorter, help dearer and competition keener.

I will now give a short description of another mill of the same size, but spinning different kinds of yarn. Figs. 3, 4 and 5 show the card room and spinning room in the spinning and knitting mill of the "Aalgaards Uldvarefabrikkers" at Figgen pr. Stavanger, Norway.

Fig. 3 is general view of cards; Fig. 4 shows the finisher card and condenser; Fig. 5, spinning room. The cards and mules were built by C. E. Schwalbe, Werdan, Saxony. The card room contains four sets of cards, and the spinning room eight self-acting mules of 400 spindles each. A set of cards consists of three machines. The diameter of cylinders is 49 inches; diameter of doffers, 28 inches; diameter of workers, 7 inches.

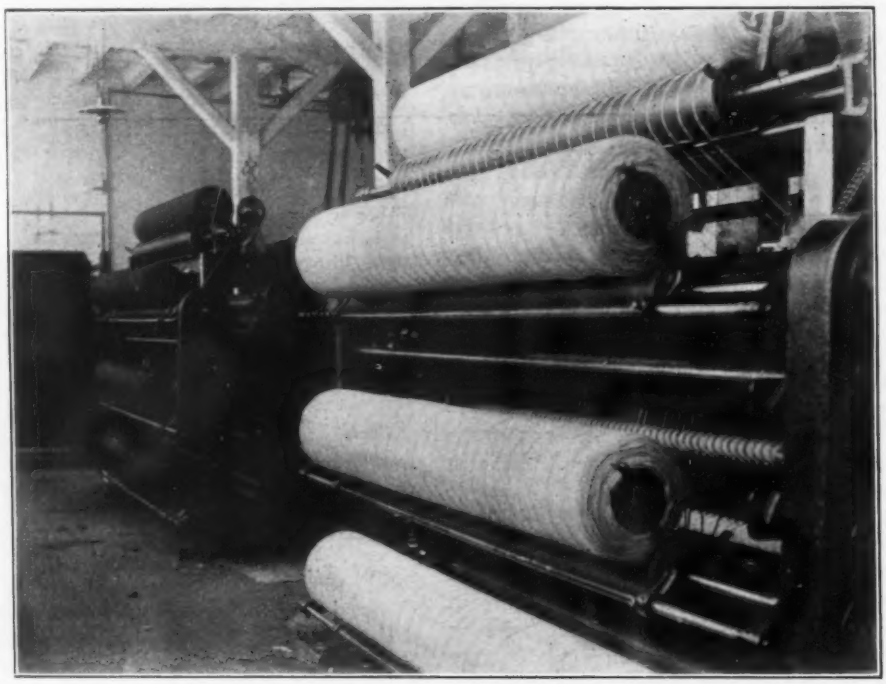


FIG. 4. FINISHER CARDS IN A WOOLEN MILL AT AALGAARD PR STAVANGER, NORWAY.

The cards are 69 inches wide. The cylinders of first breakers make 165 revolutions per minute; second breakers and finisher cards, 155 revolutions per minute. There are five pairs of workers and strippers to every card.

The first breaker is equipped with self-weighing, automatic feed, and has a breast attached, consisting of one cylinder and two pairs of workers and strippers, covered with garnett wire.

Blamire feeds are attached to the first breakers. The second breakers and finisher cards are connected by automatic broad

band feeds, feeding fibers parallel to the finisher.

It is now customary to have all three cards connected by band feeds, and the Blamire feed was adopted in this instance because it was desired to have a break in the set, to save time in stripping and grinding. The Blamire feed is also adapted for all kinds of stock and is the only lap feed, with the exception of the old lap drum, that can be used for a long, loose wool.

The Blamire crosses the fibers, but this is not considered a drawback by all carders. The stock is blended or mixed better by this feed than by any other lap feed. The first and second breakers have a thin, curved iron plate fixed under and close to the swifts. The object of this is to stop the fibers from falling under the card. It is quite necessary to have this fixture when coarse wool is carded on cards running at a high speed.

These plates will not cause any trouble when good, clean stock is carded. If stock containing much dirt is carded, they have to be taken out and cleaned occasionally. These plates are not used on the finisher card, as dirt or wool, which accumulates, will be taken up by the cylinder and make faults in the roving. The finisher card produces 120 good ends, and has a leather strap condenser supplied with four pairs of rub rolls. The work varies from all cotton to all wool knitting yarns, cheviot weaving yarns spun of coarse domestic wool, shoddy yarns and fine wool yarns for ladies' broadcloth and flannels.

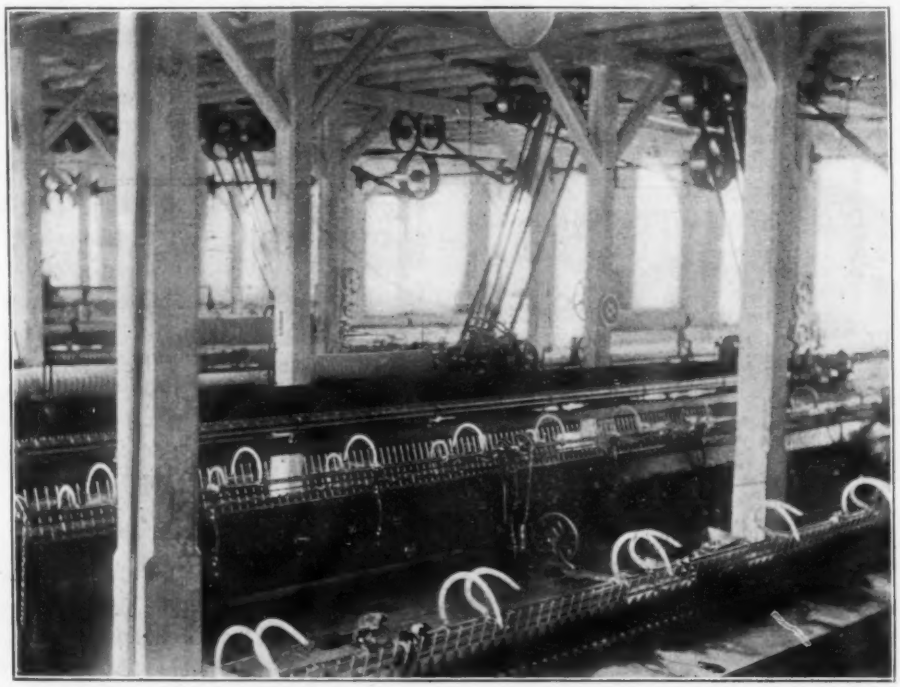


FIG. 5. SPINNING ROOM IN A WOOLEN MILL AT AAGAARD PR STAVANGER, NORWAY.

The production on 1 1/2 run yarn is about 3,300 pounds of spun yarn in a week of 60 hours; on 4 3/10 runs, 1,850 pounds of yarn. These figures are for one set of cards and two mules, the cards running 68 hours in a week and mules 60 hours. This is the actual production based on the average during the year.

The carders run all day without stopping for breakfast or dinner, making in all eight hours more every week than for the mules. The strippers, picking room men, or other

hands about the mill mind the cards during meal hours and have their work arranged accordingly. One carder and a boy is employed for two sets of cards; and one spinner and two or three boys or girls for every pair of mules.

It is very important when running these high speed Continental cards, covered with short card clothing, that the shoddies and wastes used should be clean and free from dust. It also pays well to use a good wool oil.

The above mentioned firm make their own shoddy. Due care is taken in preparing and pulling the rags to have the shoddy as clean and sound as possible.

NOTES ON COTTON MANUFACTURING.

BY ROBERT CORNTHWAITE.

[The following notes on cotton manufacturing were written by the late Robert Cornthwaite of Skipton, Eng., and were found among his papers after his death, which occurred some months ago. Mr. Cornthwaite began work in a cotton mill in 1857, at the age of 20, and continued in the same business until within a year of his death. He advanced steadily from the beginning of his mill work, filling the position of overseer of spinning, next of spinning and weaving, and then of mill manager. In the last named capacity he for many years had charge of the Coats Thread Mills at St. Petersburg, Russia, and at Barcelona, Spain. The notes which we now place before our readers were made by Mr. Cornthwaite for his personal use and with no idea of their being published. They embody, in concise form, a large amount of useful information acquired by a very successful manager of English cotton mills. Ed.]

THE STRENGTH AND ELASTICITY OF COTTON YARNS.

The standardization of the strength and elasticity of cotton yarns of various qualities and twists in the grey and bleached condition: As cotton yarn varies in strength and elasticity from many causes, we will before fixing any standard notice a few points in practical cotton spinning which help to make a strong thread. These points apply to all qualities of cotton yarn.

COTTON MIXING.

The cotton must be suitable for the quality of the yarn that has to be spun. A mixing of cotton should be of fairly equal staple. In every lot of cotton we find some variation, therefore the cotton from a number of bales should be well mixed together. The cotton must be neither too old, dirty nor damp and should be moistened to the condition of the mill before being put through the machines.

COTTON FOR VARIOUS COUNTS OF YARN.

No fixed rule can be given for the length of staple required for any given count of yarn, as it is often convenient to spin several different numbers of yarn from the same cotton. When an extra quality of yarn is required, 30s is often spun from a roving that is used for 40s. Other numbers of yarn are thus called "spun down" so as to get extra strength. Good strong yarn cannot be spun from cotton that is not long enough for the count of yarn.

SCUTCHING AND CARDING.

No yarn can be of good strength if the cotton has been subjected to any treatment as it passes through the various machines that would "nep," string, cut or in any way damage the fiber. The carding especially must be satisfactory.

COMBING.

We must also notice that in the process of combing about 19 per cent. of short fibers are taken out, so that the fibers in combed yarn are not of such various lengths. As the fibers are all straightened out they make a more solid thread and have about 10 per cent. more strength than carded yarn. Combed yarn is now used for all goods where a good appearance is desired, and is largely used for goods that have to be mercerized. Sometimes cotton is twice combed so as to obtain greater strength and brightness.

DISTANCES AND LEATHER ROLLERS.

The right distance between the fluted rollers, and the adjustment and good condition of the leather rollers determine to a great degree whether the yarn is free from uneven places and small snarls or "cockles," as they are called, which affect so much the strength of the yarn.

DOUBLING SLIVERS.

In all stages of the spinning process, the slivers are usually doubled, in order to get the threads as near one thickness as possible. In spite of this frequent doubling, no yarn is spun without some variation in thickness and evenness. The yarn which varies the least will have the greatest average strength. Some of the lower qualities of yarn are spun from single roving; this omission of one doubling gives a thread of much less strength and evenness.

UNEVENNESS IN YARN.

It is the small threads and the unevenness in yarn that give trouble in weaving, while thick ends destroy the uniform appearance of the cloth. If the slivers are worked too tight at the intermediate and roving, between the front delivery roller and the heel of the flier, the sliver will be unevenly "ratched." The fine places in the yarn will reduce the strength from 5 to 12 per cent. according to the tightness at which they are worked.

TWIST IN SLIVERS.

If too little twist has been put in the slivers, the slivers may be "ratched" unless the creel pegs run very easy. If too much twist has been put in, and the sliver is too strong, the rollers may not be able to draw it easily and the result will be unevenness and weak yarn.

INSPECTION OF YARN FOR UNEVENNESS.

The best way of inspecting yarn for unevenness and other faults is to wrap the yarn (which has been previously tested for counts and strength) on several black boards, to show knots, slubs, etc. Photos of these are sometimes taken and then thrown on a screen on a large scale. Practical men judge yarn sufficiently well on the black boards, and spinners do not like to see the faults in the yarn magnified.

Humidity in yarn should also be considered. Before testing the yarn should be dried and then allowed to regain its natural moisture. Yarn is often spun two counts fine and then moistened to bring it to the right counts.

HEAVY OR LIGHT YARN.

If the counts of the yarn are below or above what they should be, the strength of the yarn will be affected. Yarns are often spun on the heavy or light side owing to the use of draft wheels with too coarse a pitch. If a change wheel has only 30 teeth and the counts being spun are 61s instead of 60s, to thicken one tooth means two counts, and it will make the yarn as much too heavy as it was too light. Whereas if the change wheel had been a 60, to thicken one tooth would only thicken one count. By the use of fine pitched change wheels, the counts of the yarn may be kept much nearer to the right size.

VARIATION IN THICKNESS.

A good spinner will turn out yarn that does not vary more than 2 1/2 per cent. in weight on either side of what the right weight should be for any given count. Thus the weight of 1 lea (120 yards) of 50s is 20 grains, and the variation should not be more than from 19 1/2 to 20 1/2 grains. The weight of 7 leas of 50s is 140 grains and should not be less than 137 grains or more than 143 grains, which is equivalent to 49s to 51s.

Good combed 50s yarn should test on Goodbrand's machine as follows:

1 lea	20 grains	44 lbs.	1⅛ elasticity
1 "	19½ "	43 "	" "
1 "	20 "	44 "	" "
1 "	20¼ "	44½ "	" "
1 "	20 "	44 "	" "
1 "	19¾ "	43½ "	" "
1 "	20½ "	45 "	" "
1 lea =	20 grains	44 lbs.	1⅛ elasticity

TWIST IN YARN.

Warp yarns are always spun "twist way," that is, they untwist the way that a clock pointer goes around. Warp yarns used to have the twist put in the reverse, but now most spinners put the twist in weft "twist way."

The amount of twist put in yarn at the spinning determines very much what the strength and elasticity of the yarn will be. Ring yarn spun from good Egyptian combed cotton is at its best strength when the twist

put in is 4 1/4 times the square root of the counts of the yarn. If the counts of the yarn are 50s, then the square root of 50 equals 7.071 times 4 1/4, equals 30.052. With more twist than 30.052 turns per inch the yarn is snappier and weaker. For the lower counts of yarn a lower quality of cotton is generally used, but to show the effect of different quantities of twist on the strength of the yarn, we give at Table 1 the results of tests from 20s to 60s, all spun from the same cotton, good fair Egyptian combed, with twists varying from 3 to 4 3/4 times the square root of the counts. The tests for strength were made on Goodrand's machine, driven by power at a constant speed, the screen traversing 3 inches in 15 seconds. The yarn was carefully weighed on a chemical balance, each lea being weighed to 1/4 grain.

TWIST IN WARP YARNS.

Yarn spun with twist to give the maximum strength may have too much or too little twist for some kinds of cloth. A small quantity of twist in the yarn gives a softer feeling to the cloth. On the other hand, a cloth woven with a 50s warp in a 98s sett, with 160 picks per inch of 70s weft is subjected to so much rubbing in the healds and reed, that it is better to have 10 per cent. more twist in the warp to reduce chafing in the weaving, something which careful sizing cannot prevent in very fine work. The twist put in yarn must be soft, medium, or hard to be suitable for the goods to be made. See tables 2, 3 and 4.

TWIST IN WEFT YARN.

The twist put in weft is such as is most suitable for the goods to be woven from it. Generally weft yarn is preferred soft twisted, that is, with about three times the square root of the counts of the yarn in one inch, but it must not be so soft as to give trouble in the weaving. Ring spun weft yarn at first had more twist in it than was good for the feel and appearance. Now that rings of small diameters and in some cases a little better grade of cotton are used, less twist can be put in ring yarn for weft. As a result the objection to ring weft is disappearing and the manufacturer is able to use a yarn for weft that can be spun more cheaply than mule yarn. See tables 5 and 6.

FINE NUMBERS.

The finer numbers of combed yarn are mostly all spun on the mule, as this machine puts very little strain on the thread. Few of the fine numbers are used for weaving as single yarn. Two fold yarn is used for a large class of woven goods and for the lace trade, and a large proportion of the production of the fine spinners is used for sewing cotton. As these fine numbers are spun from long staple cotton and as they are mostly used for doubling, the twist put in the yarn is less in proportion to the square root of the counts, than in the lower numbers, which are spun from shorter cotton. See table 7.

TWISTING UP SINGLE YARN.

Single mule yarn of any count may be increased in strength about 17 1/2 per cent. by being spun soft with twist in proportion to about three times the square root of counts, and afterwards run through water on a ring twist frame, putting in extra twist of 1 3/4 times the square root of the counts, making the total twist equal 4 3/4 times the square root of counts. If this quantity of twist was all put in at the mule the yarn would work badly. Example:

	Count	Strength	Twist
45s yarn	44.8	44¼ lbs.	20.124=3×counts
Extra twist put in at ring frame			11.739=1¾×counts
From twister	44.35	60 lbs.	31.863=4¾×counts

The above method of twisting was tried on various counts and the extra strength was gained. It is largely used for a good quality of sewing cotton.

TESTING STRENGTH AND ELASTICITY OF YARN IN SINGLE THREADS.

When yarn is tested by single threads for breaking strength and elasticity, we get a more correct result of the quality of the yarn than when it is tested by the lea. When testing by the lea there are too many ends under and over each other for us to get a correct estimate of the strength and elasticity. When tested singly, every thread must bear its own burden, and so we find out the weak threads that give so much

trouble in the weaving. When the spinner makes alterations in twist or distances between rollers, it is only by taking tests before and after the alteration, of single threads, spun from the same roving, that he can tell whether he has made the yarn stronger or weaker.

HAND TESTING.

When we take up a cop or bobbin of yarn, we pull out a length and try the strength and elasticity. An experienced buyer knows when he handles a good yarn, but the mental impression left is not as satisfactory as an exact record, especially when we want to compare different yarns. The spinner must sometimes give a guarantee that cloth shall not only be of a certain weight, but also of a given strength. As it is the strength of the yarn that determines the strength of the cloth, we must test the yarn often in order to keep up to the guarantee.

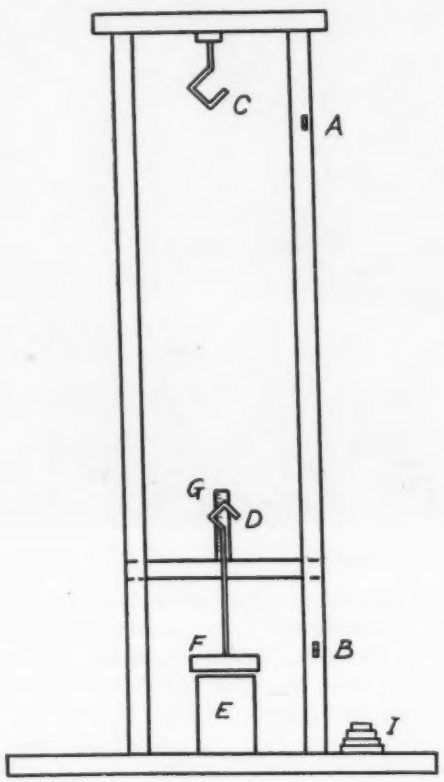


FIG. 1.

APPARATUS.

The apparatus shown at Fig. 1 has been especially constructed to give an accurate test of the breaking strength and elasticity of single yarn, and also of sewing cotton. There is no friction put on the yarn and it has been found to give reliable results. It is only by an apparatus of this kind that the strength of short lengths of yarn, or threads from a warp can be tested.

The parts are indicated as follows: A and B, hooks on which to put a lea of yarn. C and D, hooks on which to tie yarn to be tested. E, a block to hold up hook, D, while end is tied. F, a block weighing 1 ounce on which to place weights. G, measuring scale for elasticity. H, indicator pointer, for elasticity. I, weights.

(To be continued.)

AN IMPROVEMENT IN CLOTH SHEARING MACHINES.

From Leipziger Monatschrift fuer Textil-Industrie.

A new cloth shear recently placed on the German market embodies a number of important improvements in this class of machinery. The new machine is 65 inches wide, has 8 heads or cutters, shears the cloth on both sides and is equipped with an automatic appliance for removing flocks. Each revolver or shear head is driven by a separate motor, having its own switch, the eight motors being controlled, when required, by a central switch. The cloth is also carried through the machine by a separate motor which can be regulated so that the speed of the cloth can be changed independently of the cutting parts.

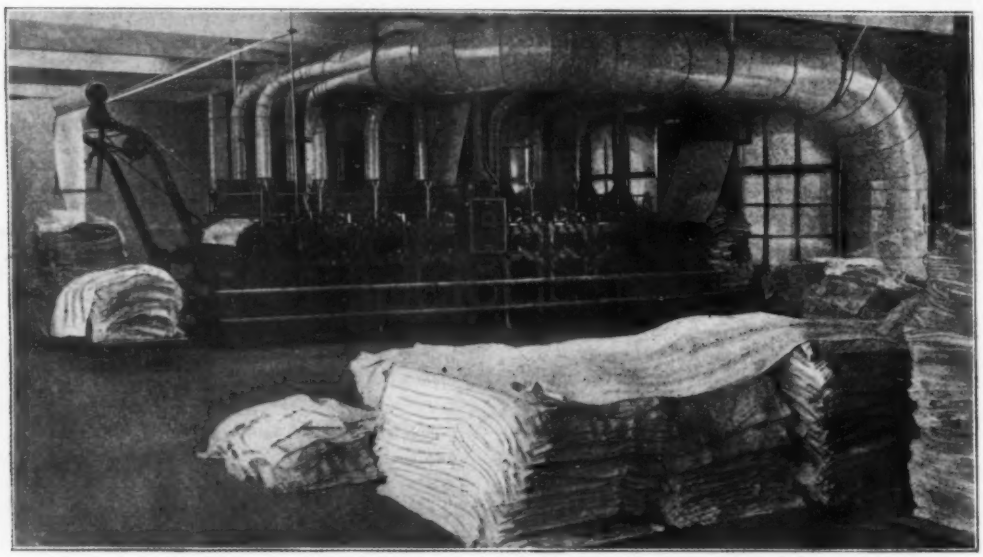
This machine is shown in the accompanying illustration. Here the main pipe for removing the flocks is large enough to accommodate three 8-head machines. The fan for removing the flocks from the machine is located in the basement and blows the flocks into a receptacle at the outside of the mill. The use of separate motors for each cutter obviates the many difficulties that arise from the use of one system of belting

for driving all the revolvers. It is claimed that by this arrangement of motors a saving in power of 40 to 60 per cent. is effected. One or more of the cutters can be thrown out of action and the machine operated with the others with a proportionately reduced consumption of power.

In case of accident the entire machine can be stopped by using the main switch. This method of driving the machine also results in a great economy in the use of lubricating oil. A further advantage is the ability to run the cloth at any desired speed independently of the cutters. The air blast for removing the flocks is so adjusted as to result in a minimum pressure of the swab on the revolver, which has an important influence on the amount of power required for operating the shear.

It is stated that a clogging of the machine by flocks is impossible in this machine, the draft caused by the revolver being utilized to keep the machine clear. Special care has been taken to provide means by which the cloth is spread out and kept free from wrinkles during its passage through the shear. The machine is equipped with a device by which the blades are automatically raised to allow the passage of the seams. The operator raises the first blade by hand to allow the seam to pass. The first shear head or cutter is connected with a device which automatically operates the other seven cutters, raising them at the right time so as to allow the passage of the seam.

The production of the new shear varies of course with the grade of goods, but it is stated that a production of 45 to 50 yards per minute has been obtained with good results. The power required is 8 1/2 h. p. for the machine and 7 h. p. for the flock removing apparatus. Each shear head is provided with a scale which indicates closely the distance between the blade and the face of the goods. The machine requires for its operation a man and two girls.



A NEW GERMAN CLOTH SHEAR.

In 1900 there were $1,042,997,577 invested in the textile industry in the United States.

In Metz, with 65,000 population, there were 3 unskilled to every 4 skilled. Muelhausen, with 100,000 population, had 69 unskilled in every 100. In Strassburg, with a population of 175,000, there were 2 skilled to every 3 unskilled.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Press Roll on Pickers.

Editor Textile World Record:

What advantages are there in using a press roll on cotton pickers? This roll lies on the back lap in front of the calender rolls. Putnam (1023).

The press roll on cotton pickers is employed as an additional calender roll, to assist in expelling the air from the sheet of cotton before it is rolled onto the lap. The roll is not driven by means of direct gearing, but simply by frictional contact with the cotton and the calender rolls. Bolster.

The press roll is a hollow iron roll resting on the back calender or fluted roll, often called the lap roll. On the Kitson machine it is carried on two pins bolted to the sides of the machine so as to allow free movement. It is kept at all times in contact with the lap roll. The strip of cotton as it leaves the last pair of calender rolls, passes directly under the press roll and is carried forward to the lap by the action of the two rolls, that is the press and lap rolls. The purposes are two-fold:

First. It lessens the tendency of the lap to wrap around the calender roll while the machine is starting up and running, as it comes into contact with the lap just as it is leaving the calender rolls and just before it is wound into the lap.

Second. It breaks the lap when the knock-off occurs and starts the lap when the machine is again started. When the knock-off operates, the lap rolls continue to revolve while the calender rolls stop. The press roll, resting on the lap and pinching it between itself and the back lap roll, continues to revolve from contact with the lap roll and thus breaks the lap into a straight edge at this point. When the lap is removed and the machine again started the press roll immediately receives the end of the lap when broken off and together with the aid of the lap roll passes it up over the back lap roll and down to the lap rod where it is wound into the form of a lap. Steuben.

The advantages of using a press roll on cotton pickers are several, probably the most important being the prevention of the layers of cotton sticking together, and gathering up portions (tufts) of cotton from the previous or succeeding layer when being unwound at the carding machine.

Uneven laps of this description are detrimental to good carding, and cause injury to the card wire, as the wire gets partially choked in places, while these tufts of cotton are being straightened out; and as it has to be forced through the same space that the regular thickness of lap goes through, it is obvious the staple of the cotton must be injured to a certain extent by the treatment it receives at this point, and the card wire suffers from the extra strain put on it.

There are many so-called improvements that will accentuate some slight trouble previously existing, while overcoming the more apparent trouble, and if the cotton composing the lap has not been evenly distributed through the picker, by the beater blades taking the cotton from the feed rollers evenly, and the draught distributing it regularly on the cages, it will come through in thick and thin places. The pressure of the press roll will have a tendency to make the thick portions hard and more difficult for the card to deal with in a proper manner, as the more open and regular the cotton lap is fed to the card, the more satisfactory will be the result.

"Sticky laps" are a source of great trouble at times—damp cotton will cause it, or cot-

ton that has been exceedingly hard pressed in the bale, such as the outer sides and center of the round bale. Small pieces will occasionally go through the picker without getting opened out, and will "pick up" from the next layers of the lap when being unground; but given properly manipulated cotton, the press roll will improve the lap, so far as the winding and unwinding goes.

Another advantage is in improving the appearance of the ragged edges of the laps that some machines make, thereby assisting in perfecting the lap, though these unsatisfactory selvages are usually caused by some obstruction at the sides of the machine, either at the ends of the cages (cylinders), or else at the ends of the calender rolls, or by the casings at the sides of the machine getting displaced, and allowing a draught where it should be kept perfectly air tight.

A further advantage is getting more length of lap in the same bulk, through the extra pressure condensing the cotton, and preventing the laps being so soft and "sloppy," while another advantage of this pressure and consequent condensation of bulk, is less waste in the subsequent handling necessary in removing the laps to the cards (as this entails their being carried a considerable distance at times), and the more compact the laps, the less waste will be made, through the cotton dropping off, or having to be pulled off, before being put on the cards; and there is a great deal of waste made through having bad laps; and though this cotton can actually be used over again, and really is not loss, yet there are a certain amount of wages and expenses debited against every pound of cotton going through the mill, that it behooves the management to prevent any more cotton than can possibly be avoided having to be put through a second time, as it increases the cost per pound to a very appreciable extent where there is an excess amount of waste being made through unsatisfactory laps, and is a most important leakage that could and should be prevented by immediate attention.

In modern mills, where the laps are fixed in stands as they are taken off the picker, and are run direct to the cards on a trolley arrangement, it prevents a lot of waste cotton, as the less the lap is handled after leaving the picker the more satisfactorily it will work.

Softener for Cotton Yarn.

Editor Textile World Record:

We are boiling 2/26s cotton yarn in an open kier for 8 hours. After washing, liming and scouring, we soap and blue the yarn and then extract it. What softener should be used to make this yarn feel less harsh, and should it be used in the soaping? Warwick (1020).

Softeners are generally used in the soaping. Any good softener would do the work. Most bleachers use no other softener but a good soap, or they add to the soda liquor some form of soluble oil, such as monopole soap, Turkey red oil, etc. This helps to cleanse and soften the yarn. The yarn can be made to feel less harsh if carbonate of soda is used instead of caustic soda in the boil, or by using sulphurous acid or bisulphate of soda, instead of sulphuric acid. Wash the yarn well, especially after using the acid. Amazon.

Curly Knit Goods.

Editor Textile World Record:

We are having difficulty with the curling of fine knit goods, either silk or cotton for ladies' long gloves. We have tried pasting but this has spotted the goods. We would appreciate very much some suggestions for remedying the trouble.

Yosmite (1014).

All flat knitted cloth, that is, cloth knit with one row of needles, will have a tendency to curl. Without starch it will be impossible to get flat cloth to lay as smooth as rib cloth or cloth knit with two rows of needles. It will be necessary to boil the cloth, extract and then dry over drying frames which wind the cloth back in a roll as fast as dried. Another method is to steam the cloth thoroughly, dry out and iron over hot cylinders, rolling the cloth up as on a drying machine. This method is probably the better way for mercerized and silk goods as it has a tendency to put more luster on the goods.

Badger.

As a general thing all knitted cloth if cut just as it comes from the knitting machine, will curl on the sides or edges. The cause is inherent to the fabric. A series of loops

one interlaced with the other both above and below impart elasticity to the fabric, whereas woven cloth is composed of two sets of straight threads intersecting each other at right angles.

In many cases knit cloth as it comes from the machine is first wet or scoured and then dried; this prevents curling in cutting. Woolen knit cloth is sometimes cut in the grease as it is taken from the knitting machine; this curls also, both at the edges and also across top and bottom, but the edges are straightened in the process of seaming. Silk knit cloth curls more than cotton or wool. This I think is due to the wiry nature of the silk thread. Where silk and cotton knit cloths are cut as taken from the knitting machine, there are two ways to overcome the curling. One is to wet the cloth thoroughly and then roll it over a drying machine. The other way is to steam the roll of cloth until it is thoroughly dampened. This can be done by making a steam-box or chest with a perforated false bottom with steam pipes underneath. This box or chest can be made large enough to hold several rolls of cloth at a time. Then the steam is turned on for at least half an hour, provision being made to carry off the condensed steam so that only the steam comes in contact with the rolls. Water might spot the cloth.

The roll after steaming could be run over a turning machine, passing through a spreader so as to have the cloth of a uniform width on the cutting table. Running the knit cloth over hot cylinder rollers would not prevent the curling unless the cloth was first dampened by steaming. Lafayette.

Size of Yarn for Hosiery.

Editor Textile World Record:

Is there any method of determining the size of yarn to be used for a stocking of a given weight when the gauge and number of needles are known? Joyce (1027).

I know of no method for determining the size of yarn to be used when weight, gauge and number of needles are given. Any practical knitter should be able to determine about what number of yarn to use when the weight is given. I do not think there is any arithmetical formula by which the size of the yarn could be determined, for the reason that the weight of the stocking is not entirely dependent upon the size of the yarn. It is possible to knit goods of different weights on the same machine, using the same yarn in each case, by adding or taking out stock and by tightening or loosening the stitch. It is also possible to knit goods of exactly the same weight and use yarn of different sizes on the same machine and by the same method. For example, a knitter can get out a half hose on an 180 needle machine using No. 14 yarn, to weigh 1 1/2 pounds per dozen, and he can make a stocking of the same weight from No. 13 or No. 15 yarn, by simply taking out stock and loosening the stitch in one case, and putting in stock and tightening the stitch in the other.

In changing to a finer number it is necessary to put in more stock and tighten the stitch, while in changing from a fine yarn to a heavier it is necessary to take out stock and loosen the stitch.

By putting in or taking out stock is meant increasing or decreasing the number of revolutions the machine makes in knitting the stocking. It can be readily seen that it will take more fine threads laid side by side to make a stocking 10 1/2 inches long, than it will to make a stocking of the same length if a coarser thread is used. All machines are adapted to using different numbers of yarns with equally good results.

The following is a table of the various gauges of machines and also the various numbers of yarns which can be used with them with good results:

76 needle, 12 gauge, 3 1/2 inch cylinder = Nos. 4, 4 1/2, 5 or 5 1/2.

84 needle, 18 gauge, 3 1/2 inch cylinder = Nos. 5, 5 1/2 or 6.

108 needle, 24 gauge, 3 1/2 inch cylinder = Nos. 5 1/2, 6, 6 1/2 or 7.

120 needle, 30 gauge, 3 1/2 inch cylinder = Nos. 6 1/2, 7, 7 1/2, 8 or 9.

136 needle, 33 gauge, 3 1/2 inch cylinder = Nos. 7 1/2, 8, 8 1/2, 9 or 10.

160 needle, 36 gauge, 3 1/2 inch cylinder = Nos. 10, 11 or 12.

180 needle, 48 gauge, 3 1/2 inch cylinders = Nos. 12, 14, 15 or 16.

200 needle, 32 gauge, 31 1/2 inch cylinder = Nos. 18, 20.

Any of the yarns can be used with good success on the respective gauges. On some machines an even greater range of sizes can be used, but it is apt to cause more or less bad work. It must not be understood, however, that the same weight can be obtained on a certain line or gauge of machine by using any one of the numbers given in the table. Hose knit from No. 7 yarn will not weigh the same as from a No. 10 yarn.

Merrill.

Uneven Bleaching.

Editor Textile World Record:

In the caustic boil we have trouble with brown spots which the boil does not seem to strike, the cloth not being bleached evenly.

Chadwick (1019).

This uneven bleach is due either to the cloth being packed too hard in places so that the caustic liquor flows down through the portion of the cloth that is not packed as hard. Many times this trouble is due to there being too much material in the kier, the goods being packed so hard that the liquor will not flow evenly through the cloth. Sometimes the trouble is due to boys trying to outdo one another. One will put more cloth in his half of the kier than his mate on the other side. I have known cases where kiers were filled clear up to the manhole and packed as hard as a board. I know of a case where a German invented a kier in which he claimed that the cloth could be laid down in the fold and not in the usual rope fashion. The goods were laid down flat, piece upon piece, until packed in one solid mass. They were then boiled eight hours and the caustic circulated through with a rotary pump. The result was that the only part bleached was around the edges where the caustic circulated freely. Some parts of the goods were still dry after the eight hours' boil.

All bleachers understand the importance of packing the kiers evenly and not too hard. Bean in his "Practical Bleaching" says: "Particular attention must be paid to the manner in which the cloth is packed in the kiers. It should be laid in long, even layers and not allowed to collect in heaps or the result will be an uneven bleach, due to the coils preventing a free circulation of the liquor through the cloth. If the cloth be properly arranged and not simply dumped into kiers the liquor penetrates easily and thoroughly."

Tailfer says in conditions necessary for good boiling: "The fabrics ought to be piled in the kier and the lye circulated in such a manner that the goods are thoroughly saturated, otherwise spots will be produced where the dirty lye has lain, or unequal bleaching will result where the lye has not penetrated. Insufficient bleaching is also liable to cause the brown spots to appear."

Baumwolle.

Caustic Required for Mercerizing.

Editor Textile World Record:

Please let me know how much caustic soda is required to keep the mercerizing bath up to 65° Tw. when mercerizing 3,000 pounds of warp per day. There is no artificial cooling of the soda. What is the best way to dissolve the caustic soda? Is it by direct steam injected into the drum or by dissolving in boiling water? Caustic (1016).

A solution of caustic soda standing at 65° Tw. corresponds to a strength of 39.19 per cent. or 67.33 ounces per U. S. gal. As it requires twelve gallons of water or other solution to wet completely 100 pounds of cotton, each 100 pounds of dry warp will remove from the mercerizing bath 12 gallons of caustic liquor, or for the 3,000 pounds treated daily, 360 gallons, which for the above indicated strength would be 1,516 pounds of caustic. In other words, for every 100 pounds of warp entering the bath, there will be required 12 gallons of liquor at 65° Tw. containing 50 1/2 pounds of caustic.

As to the proper method for dissolving caustic soda from the drum, preference is usually given to suspending the drum by chains over the solution tank, and blowing steam directly into it. This is much simpler than any other means, although some prefer to break up the contents and dissolve loose in the tank, or to lower the opened drum in the tank and let the warm water do the rest.

Cromarty.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The greatest concern of the knit underwear jobber today is to be able to fill the orders coming from the retailers for immediate delivery. These are orders that in the ordinary course of events would have come forward in the months from February to June, and care would have been taken to have had plenty of goods to fill them with, but as they did not come at that time, the jobber, as a rule, did not have faith to provide for them and now the mills cannot turn out the goods as fast as wanted. This is true of nearly all lines of popular priced goods for men, women and children, and more particularly so for women's bleached ribbed goods and for 50 cent ribbed goods for men, and in the better grades of flat wool goods.

It is reported that on account of the good demand for wool goods the plant of the Mark Mfg. Co., which has been shut down for nearly a year, will resume operations shortly.

It is said that the jobbers in New York City have been offering a premium for women's bleached goods during the past month for spot delivery, but this of course is hard to verify.

Men's and children's fleeced goods do not appear to be as well sold up as some other lines, and it is still possible to get fairly prompt deliveries at the same prices that ruled all through the season. It looks to the writer as if men's 12-pound ribbed goods have cut into the fleeced business considerably this season; this may be accounted for in some measure by the fact that it has been possible to get this class of goods from some very reputable mills at $3.50 and in some instances as low as $3.25; whereas, the prices on standard fleeces have been held fairly firm at $3.75.

One company that produces children's goods almost exclusively has issued a circular letter to the trade to the effect that they have run continuously during the present year, anticipating a heavy demand this fall, thereby accumulating a surplus stock and are now prepared to make immediate delivery of children's and boys' fleeces. The demand is here, and the indications are that this concern will profit by its action, but it would be a different story if all the mills making this class of goods had pursued the same policy.

Spring orders have been placed by retailers fairly liberally, considering the fact that at this writing, there has been a presidential election ahead of us. The jobber has not bought more than 50 per cent. of his former requirements and it looks now as if the purchasing capacity of the public will be about as great in the spring of 1909 as in any year preceding, which means there will be an ultimate demand on the mills making spring goods to supply as much, if not more, light weight merchandise as they did in the spring of 1907.

There is another low-priced porous mesh garment for men being shown. It is made by the Last-Long Underwear Co. of Oswego, N. Y. The shirt has French collarette neck and band front, and the drawer is made with outside band, three buttons and suspender tapes. These goods are being sold at $1.90. This concern also makes the same fabric in a line of fancy stripes and it begins to look as if this class of merchandise would cut into the regular 25 cent balbriggan business to some extent.

The nainsook and soisette underwear business continues to grow and is now looked upon as a large part of the men's underwear business. While by many it is called a fad, it is certainly cutting deeply into the regular 50c. balbriggan lines.

The increase in the popularity of combination suits is becoming more marked each season and manufacturers are going to great

expense and study to perfect proportions that will enable them to produce better fitting suits and to overcome the objections raised by those who yet prefer to wear separate garments. As the tight fitting, clinging gowns for women come more in vogue, the demand for ladies' combination suits will increase.

Manufacturers of full fashioned combination suits have lowered their prices of late and it is now possible to buy a full fashioned ecru cotton suit for men as low as $12.00 per dozen.

On account of the lateness of the season in which spring purchases will be completed, it is supposed that the opening of fall lines for 1909 will also be late. Agents in New York are receiving some new samples now, but have no quotations to make and it is suggested that practically nothing will be done before December 1. Possibly the new season will not get far advanced much before the New Year.

It is reported that a movement is on foot to get the manufacturers of standard fleeces to agree upon $3.75 for a 1909 price, but it seems almost impracticable when yarn is so much lower in price than it was a year ago, and in further view of the fact that so much competition is being felt from 12 pound ribbed goods which will probably be offered at $3.25 to $3.50.

HOSIERY.

Hosiery jobbers that are booking 25 per cent. of the business that they booked last year are regarded as being fortunate.

The retailer evidently made up his mind not to place advance orders before election at least, and price inducements fail to change the opinion of the retail trade. Retailers in general will not buy until after January first. This can mean nothing less than that there will be a scarcity of certain goods next spring and consequently, the delivery on these lines will be slow and prices will be advanced by the usual law of supply and demand.

Domestic manufacturers are very anxious for business, although there is an improvement noticed during the past three weeks. Prices are low as yet; there have been no advances made.

Manufacturers of ribbed top hose report having booked about all the business they can take care of and some of them even state they are sold up to the end of the year. Prices in this line are also low.

Makers of full fashioned domestic hose are showing a very extensive assortment and are evincing a strong disposition to fight for the ground they have gained from their German competitors in the last two or three seasons and very creditable merchandise is being made to sell for 35c. and 50c. over the retail counters. Color lines in both seamless and fashioned goods are strong and are to be had in nearly all grades. Trunk top hose are being revived again in both domestic and foreign hosiery and are now being made 29 inches in length in place of 32 inches as formerly. They are a sensible stocking and deserve to be a permanent feature of a hosiery line. Four-inch welts are also being shown and they have the advantage over garter tops in medium weight goods of being more elastic.

The Chemnitz market reports an improvement in the last three weeks and now that orders are beginning to come in freely, an advance in prices may be looked for. Chemnitz prices have not changed in general, except on the heavier weight split soles. All weights of split sole goods are selling freely, but the heavier weight, about 850 grammes, are more difficult to get, and many manufacturers are sold up on these to the first of the year.

Plain and mercerized lisles are very cheap, splendid values being obtainable at popular prices and oftentimes below the limits. Embroidered hose are picking up somewhat, after being very quiet for several months. Laces, especially in boot pattern, are being sold a little more freely than formerly, but prices on these are so low that manufacturers claim to be working without a profit. They promise to be very good for another season and prices will undoubtedly be advanced before long.

In regard to colors, it seems as if almost any shade will be a seller for next season. Tans are leaders and are sold in many shades from light Paris tan to rather dark brown.

FULL FASHIONED KNITTING.

BY PAVONIA.

(Continued from October.)

I will now try to give an idea of some of the work that is being knitted on the Cotton system, and the requirements in making same. Suppose we take first the regular ladies' hose with the French foot shown at Fig. 10. This is made quite extensively in

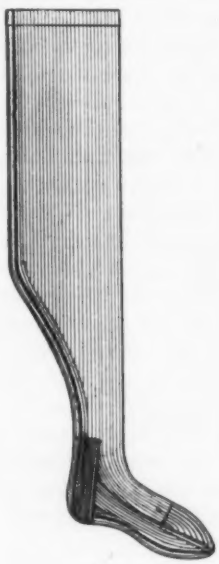


FIG. 10.

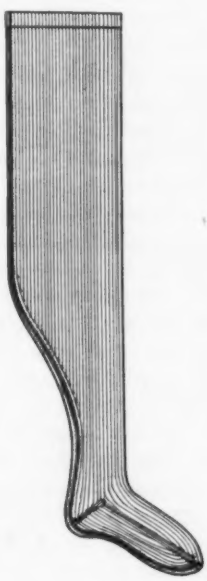


FIG. 11.

this country, being the chief product of this style of knitting machine and being made but little by any other method. Two machines are required for the knitting, one for the leg and another for the foot. It would seem, probably to one unfamiliar with full fashioned work, that a machine costing several thousands of dollars should be able at least to make a full stocking, but this is not the case on real high grade goods. The reason for this is on account of the different mechanical equipments required for knitting the leg and the foot, but as the leg by its peculiar heel formation must be taken off the machine and be transferred, it is as easy, or rather nothing is lost by transferring to a second machine for the knitting of the foot. This will be explained more fully later.

There are machines built on the Cotton system that knit the whole stocking without being transferred from the legger to the footer. These machines have both legging and footing attachments. Fig. 11 gives an illustration of the appearance of the stocking which is undoubtedly full fashioned, but it lacks the conventional square heel which characterizes all regular made full fashioned goods. This work can be produced considerably cheaper than regular work as the cost of looping heel is eliminated, as is also the transferring of leg to footer. The seaming is all done at one operation and the only looping is at toe end. Considering the apparent advantages of this machine, its adoption seems very slow.

Fig. 12 shows a full fashioned rib with a plain French foot. The writer is aware of the existence of only one machine making this class of work in America. There are a number of them in England and Germany. All the ribbed work with full fashioned plain feet made in this country is partly automatic. The rib legs are first made on round ribbers

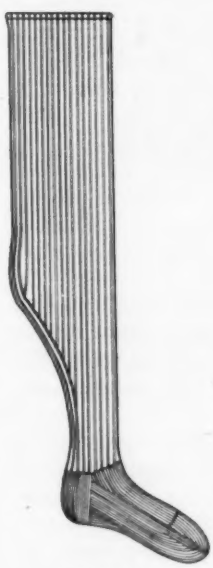


FIG. 12.

FIG. 13.

and are then transferred by girls to a machine (Cotton or Paget) and the heels are knitted. After that they are again transferred to the footer.

Fig. 13 represents the full fashioned foot with rib leg before being boarded as made in America. The comparison between Figs. 12 and 13 gives the same difference as between the regular full fashioned and automatic plain, Figs. 1 and 2, only perhaps the ribs are even more dissimilar on account of the round frame rib not being slackened or stiffened at any point as are the plain goods. Consequently it is a straight tube, having exactly the same width at part which must fit above knee or at calf as that which fits the ankle. The great extent to which ribbed fabric will stretch enables this to be boarded out for the wide parts, but one may imagine that a uniform elasticity, when the stocking is worn, is out of the question; for while the wide parts are tight, the narrow parts which fit the ankle and below the calf are loose and

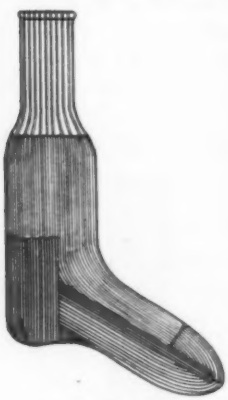


FIG. 14.

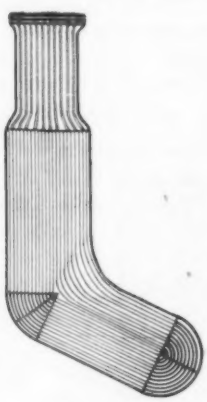


FIG. 15.

baggy. It is well known among all makers of hosiery that a round frame latch needle rib cannot compete with a spring needle flat rib. The difference is found instantly on feeling the fabric.

The full fashioned ribbed stocking is started on the proper width to give a good fitting shape above the knee and is narrowed down the calf to the small. The fabric has the same body and possesses the same elasticity throughout. It also has the same pressure when worn, at all points, both wide and small. The life of a flat rib is far longer than a round one, the fabric being firmer and possessing more elasticity. If a flat rib is stretched out it will be found that its tendency to spring back into its original shape again is far greater than the round one. This high quality of knit fabric is due to the manner in which the thread is worked by the machine.

In all flat spring needle ribs, as used on full fashioned work, the thread is sinker drawn, that is, instead of the needles drawing their own loops, the stitches are first formed by sinkers and held taut, the needles being at rest, after which these prepared loops are taken by the needles, altogether, and knitted into fabric. One-half of the entire motion of the machine (flat) is consumed in drawing the loops, or rather throwing out the sinkers which draw them, and the other half is required to knit same into the piece.

This method gives the fabric an extraordinary tension, making a tendency to hold tight together, the full elasticity being given width and none or scarcely any length. In round frame ribs the tendency is to stretch lengthwise to a far greater extent than in flat, sinker drawn ribs. This is noticeable particularly on men's half hose. The flat rib which of course can be recognized principally by the seam in the back, always clings to the leg and does not have the inclination to slip down nearly so much as is the case in the round rib which stretches widthwise and by so doing shorten in length. The ability of the flat rib machine to make a respectable welt puts this rib far in the lead from the finish standpoint. Ninety-nine per cent. of the round ribs have a raw edge at the top of the welts where they have been separated, and as the welts have mostly only 3 courses of knitting in them, this raw edge shows up very poorly at the top of all round ribbed stockings or half hose in comparison with the large cleared welt of the flat rib. Even though the flat ribs be cut apart, the welt (generally of 10 to 12 courses) is so large as to allow the cut edge to lay on the inside of stocking, thus leaving the clear, clean, finished doubled edge as seen in all full fashioned work instead of the rough fringed edge which shows on round ribs. There are generally three or more of the small three course welts made on the automatic ribs while on flat ribs it is seldom that more than one of the large welts is made as in Fig. 14. The

leg of Fig. 12 is made on a flat full fashioned rib legger. The heel, if it be a rib heel is of course knitted on the legger, but in case it is desired to make a plain heel the leg must be transferred to a heeling machine to have the heel made and lastly to the foot machine.

The cost of a modern equipment of knitting machinery to make this stocking with plain heel on the smallest possible scale would be approximately $9,000. The capacity of the different machines we will consider later.

Fig. 14 gives description of full fashioned half hose as made on the Cotton system. Three machines are required for the knitting of this line of goods. First the ribbed top is made on a flat ribber and next transferred to a half hose legger and last, the foot is made on a French footer. The rib top on this is very slender looking in comparison with the round rib top. The reason for this lies in the ability of the fabric to be boarded and stretched and yet spring back to its right width again. In this particular point the welt's superiority is clearly demonstrated, for while the round top, after being boarded, stays out wide, forming a bell top, the flat welt comes right back again making the straight, slender shape as in Fig. 14. A comparison between a full fashioned and a seamless half hose is shown in Figs. 14 and 15.

After saying a little about splicing it might be well to give some idea of the machine's construction on which this work is made before going farther into the details of the work. It will be noticed that the splicing or re-enforcing of the fabric on the full fashioned is different than the automatic. Here is a decided advantage for the full fashioned in its ability to re-enforce any desired part of the stocking whatever. There are some patent devices for splicing (other than the regular heel and toe) on a few of the round machines, but the ease with which this very important feature in knitting is performed on the Cotton machine puts the full fashioned in this particular respect in a class distinctly separate. The same device which makes the re-enforced knee on a stocking will splice the welt, or make the regular splicing as in full fashioned heels and feet. It will also re-enforce the fabric on the sides making what is called spliced selvages. This is probably beneficial on very fine goods because it strengthens the seams. The entire fabric can be re-enforced by this attachment, if desired, or any portion of it.

In splicing any part of a knit fabric a difficulty arises in the fact that the portion which is spliced always runs shorter and stiffer and consequently must be loosened to correspond with the regular fabric. When the splicing runs across the entire stocking or garment it is comparatively easy on any machine to change the stitch accordingly, or when the spliced portion only is being knitted, as in seamless heels and toes, the change of stitch is easily made. On the Cotton system of knitting when the splicing is made in certain parts only, as in the high spliced heel, instead of slackening the entire width of fabric, an arrangement is brought into action which causes a large loop to be drawn in the spliced part and the regular stitch in the ordinary fabric. For each row of stitches the stiffness must alter three times; first, slack for the splicing on one side, stiff for the middle and again slack on the other side. If this was not done, the spliced parts would run short and the unspliced or center part would be long, but with this arrangement the re-enforced and regular parts can be made to run equal in length and a much heavier splicing thread can be used than would ordinarily be possible. All the splicing operations are performed with the utmost ease and are positive in their action and unlike the seamless splicing apparatus, possesses no delicate mechanisms which are liable to get out of order.

Germany imported to the amount of $136,707,200 in 1907 against $42,649,600 worth in 1882.

The excess of imports into Germany from the United States amounted to $19,766,666 in 1903; $18,700,000 in 1904; $19,222,222 in 1905; and $24,512,500 in 1906. The increase of 1906 was partly due to the high prices of several chief articles of import, namely copper and cotton.

HILSCHER'S NEW JACQUARD FULL FASHIONED LACE HOSIERY MACHINE.

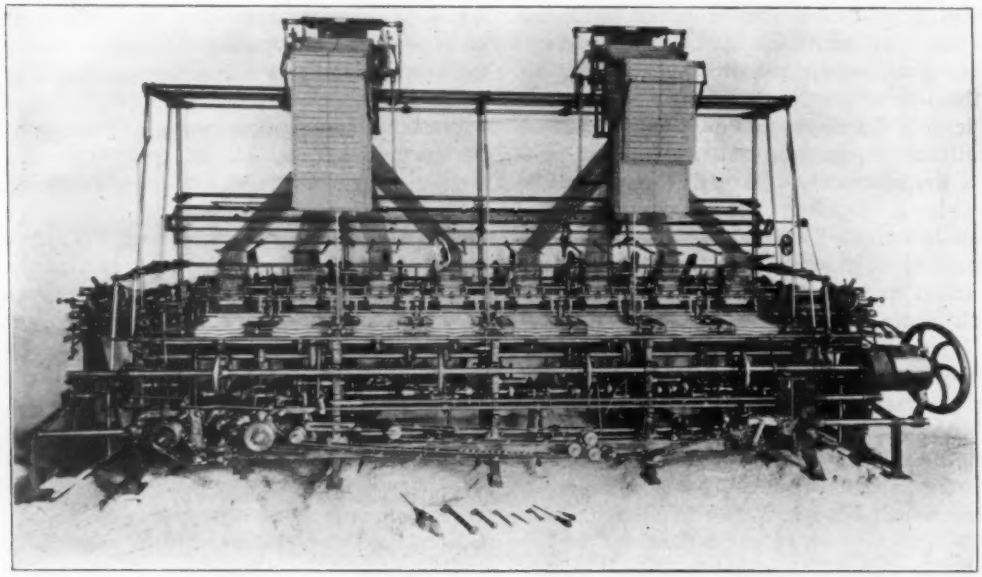
Machine lace making has been generally limited to geometrically constructed designs with the exception of a few exclusive articles made by skilled operators on hand frames. For this reason it seems to have lost some of its popularity, the trade losing interest in continuously identical style patterns. The production of exclusive designs is not only a slow process, but an expensive one and strictly limited in quantity.

A new jacquard lace machine has recently been brought out by G. Hilscher which produces an unlimited number of exclusive designs of varied character as quickly and it is claimed even cheaper than plain geometrical patterns. As shown in the illustration the machine is of the "Cotton" style, with 8 to 16 or more sections or heads. A jacquard mechanism, similar to the one used in fancy weave looms, etc., is placed over 2, 4 or 6 sections, thus commanding the pattern or lace work on that many sections.

The ordinary or 2 bar lace attachment has been displaced by a head carrying a movable narrowing point for each needle of the knitting machine bar. From the Jacquard apparatus the usual cords or strings run down to connect with each narrowing or transfer point which pulls in or out as the paper card patterns will command. It will be readily seen that any design can be produced without difficulty and the assortment of patterns varied in each dozen.

Fig. 2 shows the character of the work.

This machine is being introduced in this country by The Grosser Knitting Machine Co. and Mr. Max Nydegger, 260 W. Broadway, New York, who is the exclusive agent for all the Hilscher machinery in the United States.



HILSCHER'S NEW JACQUARD FULL FASHIONED LACE HOSIERY MACHINE.

We are informed that manufacturers in France, reputed for the elegance, quality and distinguished style of their goods, have placed large orders and are already operating a number of them with great success.

One great advantage appreciated by manufacturers is the possibility of putting their full name and trade mark of the maker in the welt of hose, remaining there as long as the article lasts, thus educating the trade and the consumer to buy and insist on getting their goods. Further technical information and details may be obtained from the American agents.

SAMPLE OF THE WORK DONE ON HILSCHER'S JACQUARD LACE MACHINE.

THE "OVERLOCK" MACHINE TO BE SOLD.

The textile trade generally and the knit goods manufacturers specially, will be pleased to know that commencing January 1st next, the "Overlock" machine which the Willcox & Gibbs Sewing Machine Co. put on the market over 15 years ago, will be sold in addition to being rented, which latter has been the practice of the company heretofore.

Our older readers and many of the younger generation in the textile industry, remember what interest was aroused when the Willcox & Gibbs "Overlock" machine was first placed on the market.

After the flat knitting frame there was no important invention relating to the knit goods trade for nearly 200 years. Then followed the circular knitting machine with its multiple needles, which became a practical success only about fifty years ago.

About 1880 the Willcox & Gibbs S. M. Co. brought out its machines which made what has always been called the "W. & G. trimmed seam," which was a great improvement over the bulky, ragged seams on underwear theretofore produced.

The W. & G. trimmed seam, however, while far ahead of anything known in the art before 1880, was still far from perfect and commencing in 1883, the Willcox & Gibbs S. M. Co., through its experts and inventors, Charles H. Willcox and Stockton Borton, undertook to produce a new machine using a double thread and lockstitch, which would seam, hem and overedge the fabric, which was trimmed in advance of the sewing, all at a high rate of speed, as the company has advertised for many years "3,000 perfect stitches per minute."

The "Overlock" machine was first placed on the United States market about 1890 and abroad a few years later. In 1899 Mr. MacFarland, U. S. Consul at Nottingham, England, wrote to the Bureau of Consular Reports at Washington:

"The 'Overlock' stitching device of Willcox & Gibbs has had a phenomenal success since the date of its introduction four years ago. . . . The keen competition among manufacturers has necessitated its use both

as a matter of economy and to improve the character of the output for a discriminating market."

The "Overlock" machine has never been sold in this country, but was leased to knit goods manufacturers on a royalty basis. While the royalty rates have been low, in fact almost nominal, manufacturers who used the system were able to produce garments highly satisfactory to buyers and the public generally, at a good profit. Still there was a natural feeling of opposition to royalties on the part of the trade and the company has been urged many times to change its policy and sell the "overlock" machine outright.

As stated at the outset of this article, this plan has now been decided upon and commencing January 1st next, the "Overlock" machine may be purchased, as well as rented.

A NEW TRIMMER AND RAVELER FOR CIRCULAR LOOPERS.

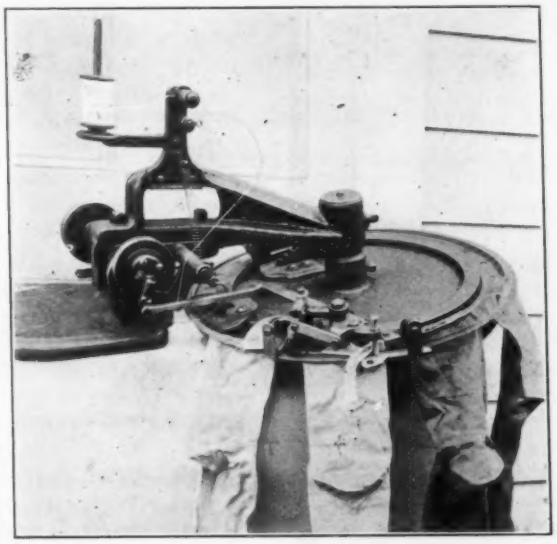
The illustration shown herewith represents a new trimmer and raveler for circular loopers, which is being brought out by the American Raveler Co. of Philmont, N. Y.

This company has been in existence for some time, and their products are well and favorably known to the trade. They are manufacturers of various styles of high speed elastic stitch sewing machines for seaming and finishing knit underwear, also raveling machines for making knit underwear and hosiery full fashion.

This new trimming and raveling attachment can be applied to any round circular looping machine. It has passed through its experimental stage, and has already been placed in a number of representative knitting mills, from whom they have received very gratifying testimonials. Among their latest shipments can be mentioned such concerns as the Brown Stocking Co., the Ipswich Mills, of Ipswich, Mass., and the Gilmenton Mills, of Belmont, N. H.

The machines are made in the very best workmanship possible. The cutting attachment is very simple in its construction and is on an entirely new principle. It can be adjusted so as to enable the operator to have a sharp edge, which will allow them to be operated several months without resharpening. The merits of this attachment are well worth the investigation of manufacturers.

One of the strongest claims made by the company is that this attachment will save at least 30 to 40 per cent. in the cost of looping, and that it trims and cleans the work as perfectly as any operator can pick it by hand, and free from making holes. The company will be pleased at any time to call on any mills interested in the subject and give them any or all desired information regarding the same.



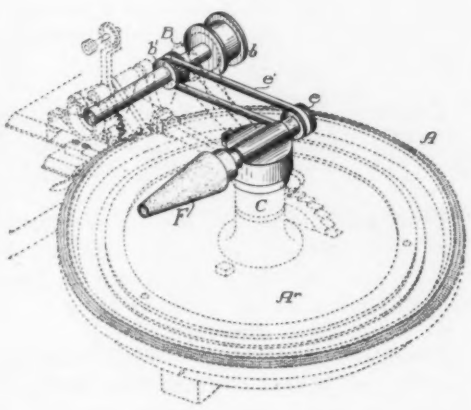
A NEW TRIMMER AND RAVELER.

A WINDER FOR LOOPING MACHINES.

The object of this attachment, for which a patent has recently been issued, is to provide means for unraveling the end of a knitted fabric to the looped point, dispensing with the unraveling of the thread by hand, and also dispensing with the cutters used in removing the waste courses, which are now common.

Figs. 1 and 2 are perspective and sectional views respectively of the device.

FIG. 1.



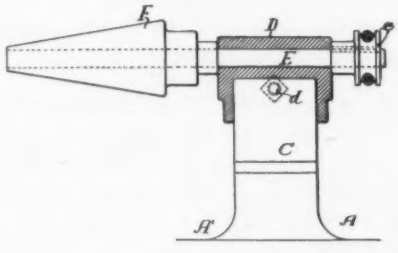


FIG. 2.

A is the looping machine having a dial A' and the mechanism for operating the dial.

B is the shaft of the looper driven by a belt which passes around a belt pulley, b, in the present instance.

C is the center bearing of the looping machine, and mounted on top of this bearing in the present instance is a cap, D, secured to the bearing by a set screw or other means.

E is a shaft extending through the cap and having at one end a pulley, e, and at the other end a winding head, F, in the form of a cone. A driving band or belt, e', passes around the pulley, e, and around a pulley, b', on the shaft, B, as shown in Fig. 1.

While F is shown in the form of a cone it may be of a different form if desired, but the conical shape seems to be most acceptable for the purpose, as the accumulation of thread can be readily withdrawn from the cone.

The surface of the conical head is comparatively rough and may be covered with felt or rubber if desirable.

This attachment can be readily applied to any looping machine and will save the time of the operator in unraveling the waste ends of the fabric placed upon the points of the looper.

Heretofore loopers have been provided with attachments for cutting off waste courses from the end of the stocking or other fabric after it has been looped, but this leaves a rough edge at the loop where the ends are brought together, as in the toe of a stocking, and is objectionable for this reason, consequently in the better grade of stockings the operator unravels two or three courses until the loop is reached; this is the preferred method as it makes a much better finish at the end of the fabric, but operators object to the hand unraveling process.

In using this attachment the end of the waste course is placed upon the revolving conical winding head and as the head revolves the thread is caught up and wound upon it. As the thread is wound upon the head it will unravel to the looping point, where it is severed. The driving band or belt, which drives the shaft carrying the head, will slip when any severe tension is placed upon the thread, so that it is impossible to draw the thread past the looped course.

KNITTING MILL NEWS.

Reports of new knitting mills, enlargements, improvements, changes, etc., will be found in the general mill news section of this issue under their proper head.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Mercerizing Machine. C. G. Haubold, Chemnitz, Germany. An apparatus for saturating cloth with the mercerizing liquor in preparation for the mercerizing process.

A Decatizing Machine. Dr. E. A. Franz Duering, Berlin, Germany. A decatizing machine in which the cloth is run from a roll through hot liquor, then through squeeze rolls and finally wound on another roll under considerable tension. The apparatus is enclosed so that the effect of the process is heightened by the increased temperature.

Thread Guide for Ring Frame. Cook & Co., Exchange St., Manchester, England, are putting on the market a metal lappet for carrying the thread guide on ring frames.

Winding Machine for Lace. Wilhelm Wissner, Goeppingen, Germany. A machine for running lace and ribbon together in preparation for sewing. This work has heretofore been done by hand. It is stated that with the machine one operative can turn off from 2,000 to 3,000 yards a day as compared with 350 yards by hand.

Shuttle Spindle. The Grossenhainer Webstuhl-und Maschinenfabrik, Grossenhain, Germany. A shuttle spindle fitted with springs which are compressed by the bobbin, the resulting pressure holding the bobbin firmly in position during the weaving process.

Dyeing Machine. A. Holle & Cie, Duesseldorf, Germany. An improved method of circulating the liquor in automatic dyeing and bleaching machines.

Machine for Straightening Skeins. C. W. Piepenbrink, Elberfeld, Germany. A machine for automatically straightening and opening up skein yarn. The skeins are hung on rods and the machine is adjusted so that it stops automatically after a certain number of vibrations.

Jacquard Machine. August Froebel, Chemnitz, Germany. An improved jacquard head motion which embodies a number of novel features. The claims for it include an increase of production, greater simplicity and a wide range of work.

Printing Machine. Friedrich Mueller, Josefsthal, near Cosmanos, Bohemia. An improved machine for printing cotton goods.

Pneumatic Extractor. Johann Wuelfing & Son, Lennep, Germany. An extractor for piece goods by which the liquor is drawn from the material by a current of air.

Bleaching Apparatus. Emil Gminder, Reutlingen, Germany. A machine for bleaching piece goods, means being provided for keeping the cloth straight during a continuous process of bleaching.

Mule Attachment. Paul Schuerer, Leubnitz, Germany. An attachment for self-acting mules having for its object to wind the broken ends on a roller placed behind the mule, thus keeping the carriage free from waste ends.

Wool Washing Machine. John Dawson, Ltd., Milnrow, near Rochdale, England. An improved wool washing machine. The base of the tank is circular instead of rectangular. The squeeze rolls are made of a multiplicity of bent steel links held together by steel rods. The wool is moved through the machine by forks in the usual manner.

Knitting Machine. Moses Mellor & Sons, Nottingham, England. A circular knitting machine for the production of golf jerseys, sweaters and similar goods.

THE "SIM-PULL" COUNTERSHAFTS.

The name of this countershaft and belt shifter, manufactured by the Mossberg Wrench Co., Central Falls, R. I., and shown at Fig. 1, was suggested by the fact that the handle is simply pulled either to start or stop the shafting. It is made either with independent hangers or with a single self-contained hanger, in both of which special attention is given to the importance of lubrication. The loose pulleys are equipped with Arguto oilless bearings, which require no oil and are not injured by oil.

The belt shifting device is simple and positive. The pull is short and when the handle is pulled more than half way the return spring completes the movement of the shifter.

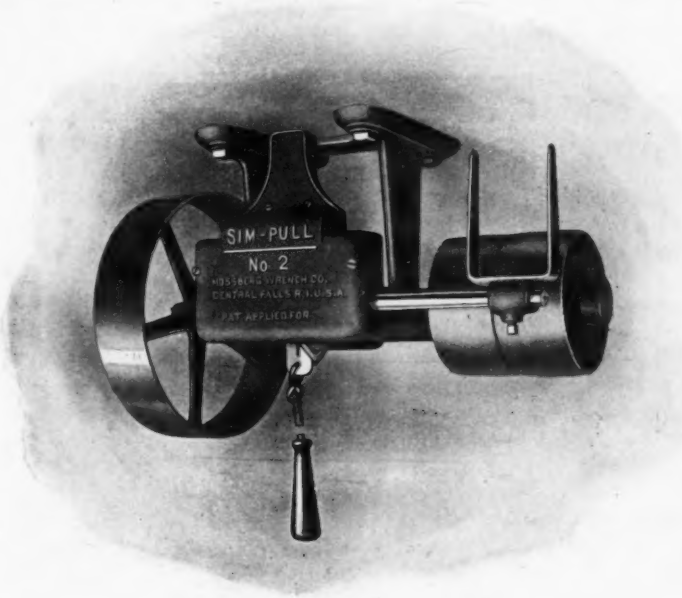


FIG. 1.

Fig. 2 shows the device for lubricating the self contained hanger. The reservoir, K, holds half a pint of oil which is conveyed to

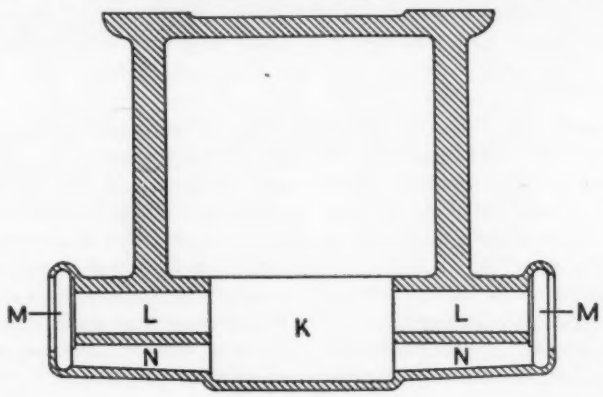


FIG. 2.

the shaft by a wide, flat wick. After reaching the shaft the oil follows along the bearings, L, to the hoods, M, from which it returns to the reservoir through the channels, N. Within the hoods, M, are centrifugal devices (not shown) to deflect into the hoods any oil that may creep along the shaft beyond the bearings.

The Mossberg Wrench Co. also build what is known as a "Multi-Pull" shifter and coun-

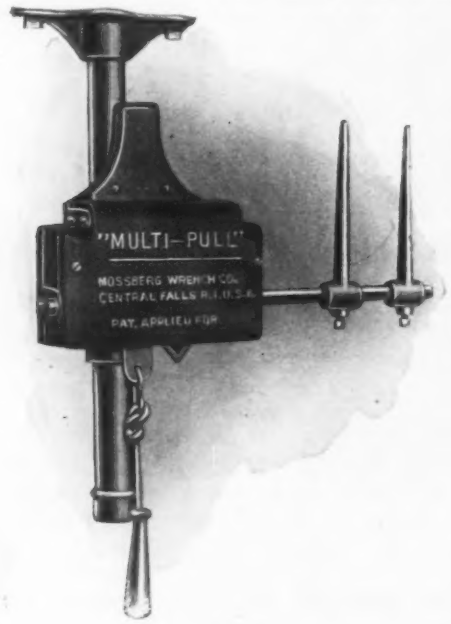


FIG. 3.

ter shaft, shown at Fig. 3, so called because by changing one small gear crank a range of action from 1 3/4 to 4 1/4 inches is obtained. Therefore, the Multi-Pull can be transferred from one belt to another of different width by substituting a new crank of appropriate throw, sometimes by simply reversing the crank already in it. The Multi-Pull is furnished with one gear crank only, and with a gas pipe hanger as shown.

The Sim-Pull is also sold as an independent belt shifter, with gas pipe hanger.

An impression exists that "pull" countershafts have a limited practical range of application, whereas their scope is very extensive. The experience of the Mossberg Wrench Co. shows that they can be advantageously used with many different kinds of machines, not only with those for metal working, but also for textile and other lines of work where there is repeated starting and stopping. The efficiency of its lubricating system, with freedom from spattering oil, commends the "Sim-Pull" countershaft to users of winding and other textile machinery. After controlling a drill press with a "Sim-Pull" one does not care to return to the old shifting lever or handle. Its use with grinders, sensitive drills, swagging machines, wire straighteners and other light machines hardly needs suggestion. And besides all its merits when used with countershafts, the "Sim-Pull" belt shifter is peculiarly adapted for application to and embodiment in machines themselves.

AN INSTRUMENT FOR MEASURING HARDNESS OF STEEL AND OTHER MATERIALS.

The art of metal working has been perfected to such a degree that the metal worker can now operate at a rate of speed very little below that of the wood worker, providing his tools are suited to the materials. This adjustment is made possible by the equipment of scientific laboratories in large manufactories. There has, however, been a great need felt for an instrument by which the hardness of metals could be determined and which would be suited for use in the shop by operatives having no special scientific training. This need resulted in the invention of the Scleroscope by Albert F. Shore and now manufactured by the Shore Instrument & Mfg. Co., 226 W. 24th St., New York.

The instrument is very simple in construction, the essential parts consisting of a glass tube mounted in a controlling mechanism and a small drop hammer which slides freely in the tube. When in position for testing metal this hammer is suspended by a small hook at the top of the tube. It is released by a pressure of air produced by squeezing a rubber tube in the same manner as a camera shutter is worked. When released the hammer drops on the metal and then rebounds. The height of the rebound is measured by a scale shown in the illustrations.

Figs. 1 and 2, and indicates the hardness of the metal. The harder the metal the higher the rebound. After each test the hammer is sucked to the top of the tube by a bulb and held by the hook until again released. This machine is based on the same principle as are the tests ordinarily made by the blacksmith, who judges very closely the degree of hardness by dropping the pieces of metal on his anvil, the spring or rebound being the gauge by which he is guided.

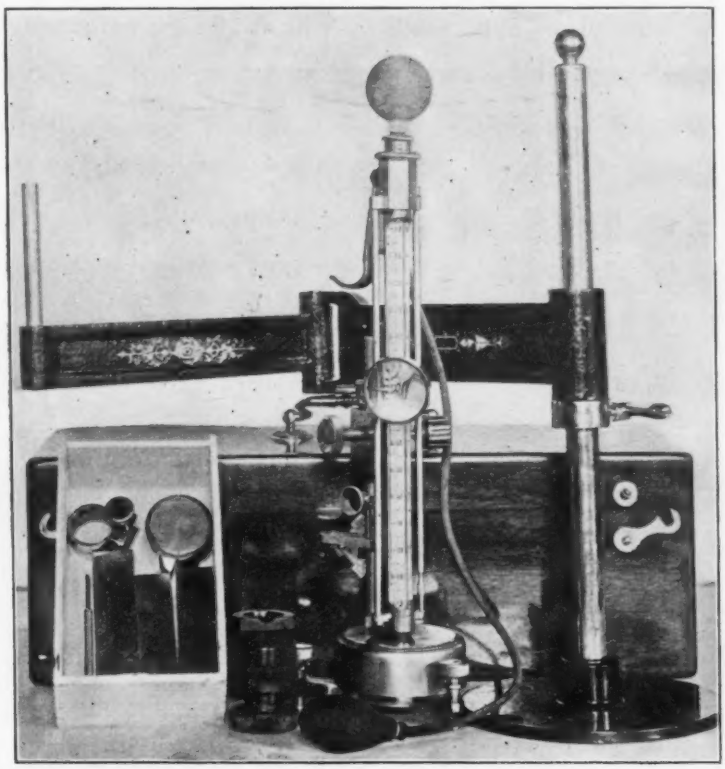


FIG. 1.

The rebound is, however, not alone sufficient for measuring the hardness of a metal; it is necessary to adjust the energy of the hammer and the area on which it strikes so that a permanent depression may be left, the object of this being to eliminate the elasticity of the material by exceeding its elastic limit. The force then actuating the Scleroscope indicator is not the resiliency of the metal, but its recuperative energy, which varies in proportion to the true physical hardness.

The builders of machinery and other users of metal will find the Scleroscope of great value. One manufacturer who used a large quantity of steel pommels, each 3/16 inch thick and having a hole 3/16 inch in diameter, found that so many punches were broken in punching these holes that it was cheaper to drill them. Occasionally from 5,000 to 7,000 holes would be stamped out with one punch, while in the great majority of cases the punch broke after one or two holes had been made, or after about 100 holes. As drilling was too expensive a Scleroscope was installed in order to test the condition of the metal. It was found that a certain degree of hardness and strength was required in the punch in order to insure the best results. As the required strength was obtained by drawing the tem-

per to a purple brown and all were so temperated it was evident that ultimate success depended on the amount of hardness remaining after tempering all alike. This depended on the hardening power of the drilling rod, which frequently varied as much as 10 per cent., while a variation of 5 per cent. often meant the difference between success and failure. Further tests show that even when the tools were made right much trouble resulted from the variation in the hardness of the stock. Instead of waiting until the smashing of dies and other tools indicated that something was wrong in the adjustment of the tools and materials, tests were made with the Scleroscope and all lengths that were too hard to be worked were rejected. The result was that the maximum efficiency of the tools was obtained.

During the two years in which the Scleroscope has been used, it has proved of great value for all kinds of tool work on both hard and soft metals, such as rivet iron, case hardening steel, brass castings for valves, piston rings, metals for drawing and bending, sheet steel, cast iron, cast steel, babbit metal, type metal, chilled rolls, carbon brushes, etc.

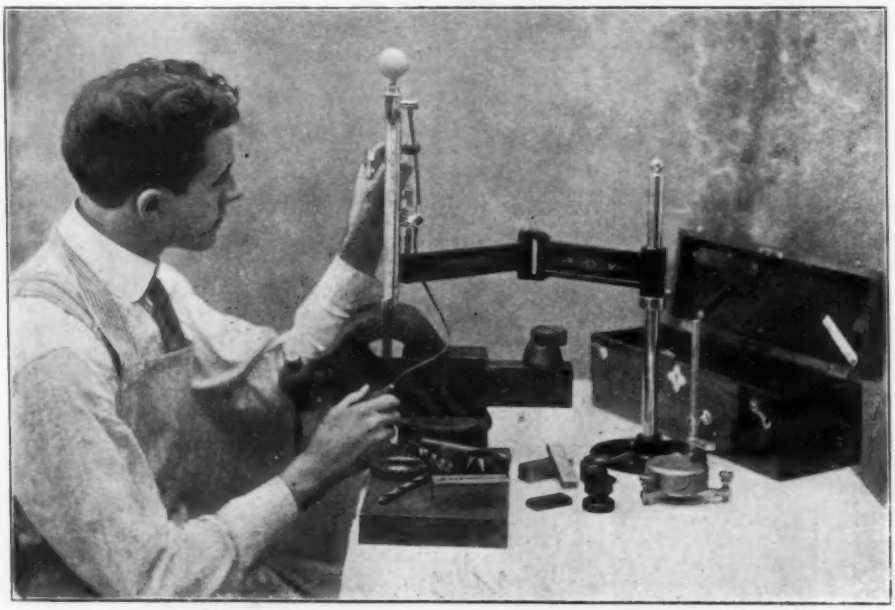


FIG 2.

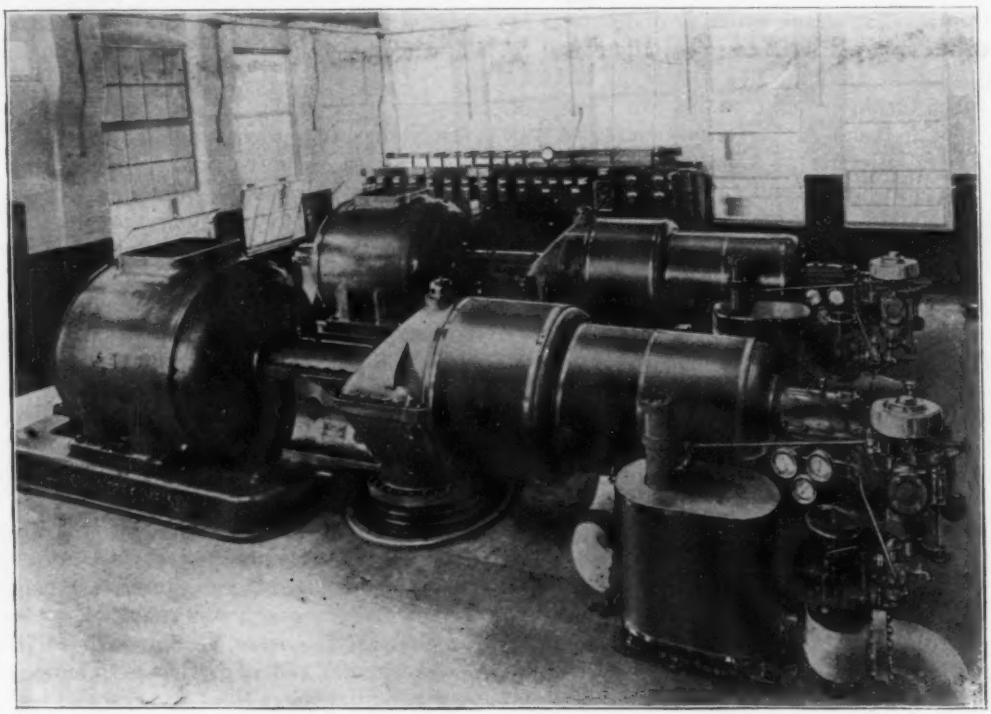
A STEAM TURBINE POWER PLANT.

In the early part of 1907 The American Thread Company decided to make an addition to the Kerr Mills at Fall River. The old plant consisted of a spinning and twisting mill, dye and gassing house. The power for the main mill was derived from a double tandem-compound engine of about 1,600 i. h. p.; and the dye and gassing houses were driven by small engines, the power from these, and the main engine, being distributed throughout the various mills by belts and shafting.

It was decided to drive the new mill electrically. The building of the new plant necessitated the complete rearrangement of the machinery in the old main mill. The new power house described in this article was, therefore, designed to furnish power for the complete plant and is arranged so that it can be conveniently enlarged to care for future power requirements.

The power house building consists of a turbine room, 43 by 56 ft., and a boiler room, 58 by 132 ft. The building is of brick with concrete floors and roofs.

The boiler room contains twelve horizontal tubular boilers built by the Bigelow Co. of New Haven, Conn., each rated at 200 h. p. The boilers are hung from beam supports and are brick set, the setting being arranged so that superheaters can be installed in the rear end of the setting. Three Foster superheaters have been installed for the purpose of testing their durability and efficiency. The gases from each battery of six boilers passes through a flue to a Green Fuel economizer and thence to the chimney. The flue back of each battery is arranged so that the gases can either pass to the chimney or through the economizers.



TWO 1500 K. W. ALLIS-CHALMERS STEAM TURBINES AND GENERATORS INSTALLED IN THE KERR THREAD CO'S. MILL, FALL RIVER.

All of the boilers are arranged for burning low grades of fuel and are equipped with "Parson" blowers and arrangement of setting. A Warron Webster open feed-water heater and purifier is located at the end of the boiler room next to the turbine room. Two sky-lights are placed in the roof of the boiler room, one over the firing space and one over the tops of the boilers. The wall opposite the front of the boilers and back of the firing space is made of galvanized iron, as any future addition to this boiler room will be a duplication of the present layout. the new boilers facing the present ones. The boiler room floor is level with the yard. Coal will be brought from the storage piles by a conveyer system and dropped in front of the boilers. The steam piping is arranged so that superheated or saturated steam can be supplied to the turbines or to the auxiliaries, either separately or in conjunction. This arrangement was made primarily for use in testing the efficiency of the different types of apparatus.

The feed water is delivered to the open heater and purifier and is then pumped to the boilers. The feed water main is of cast iron and so arranged that water can be supplied either from the pond or from the heater and

purifier, and delivered directly to the boilers or through the economizer. The drips from all of the high pressure steam mains are collected at one point and from there returned to the boilers.

The turbine room has two floors, but the upper floor where the turbines are located does not extend over the space occupied by the pumps. This space was left open so that the traveling crane which is of ten tons capacity could be utilized in installing and repairing the auxiliaries as well as the turbines.

The turbine room contains two 1,500 k. w. Allis-Chalmers A. C. turbo-generators, two General Electric 75 k. w. D. C. turbo-generator exciters, and a General Electric switchboard. This apparatus is located upon the upper floor level.

The turbines operate at 1,800 revolutions per minute, with a steam pressure of 150 lbs. at the throttle, dry saturated, and a vacuum of 28 inches of mercury referred to 30 inches barometer at the exhaust nozzle. Large temporary overload capacity has been provided for in the design of these machines; high efficiency is maintained, and close regulation secured, even under the most favorable operating conditions.

The bedplate is divided into two parts, one carrying the low-pressure end of the turbine. The turbine is secured to the former, while the latter is provided with guides which permit the end of the turbine to slide back and forth with differences of expansion caused by varying temperature, at the same time maintaining the alignment. The "Bulkley" condensers are located outside the building.

The revolving field, alternators driven by these turbines are of Allis-Chalmers Company's standard type, designed for high efficiency and safe operation at high peripheral speeds. Some of the principal advantages embodied in their construction are summarized as follows: The field core is built up of steel discs, each in one piece, giving high magnetic permeability and great strength. Coils are placed in radical slots, thereby avoiding side pressure on slot insulation and the complex stresses resulting from centrifugal force, which, in these rotors, acts normal to the flat surface of the strip windings. Bronze wedges hold the coils firmly in the slots, making the surface of the rotor a smooth cylinder, reducing windage losses and insuring quick operation. The end connections are securely held by chrome-nickel steel rings.

The stator is completely enclosed, eliminating noise of operation. Coils were completely wound and insulated before being placed on the core, thus obviating the risk of defective insulation. Stator windings are placed in open slots, rendering the coils readily removable. End connections are firmly braced, preventing deformation of coils in case of short-circuit.

For the purpose of obtaining adequate ventilation and for muffling the noise produced by the circulation of the air, the turbo-generators are enclosed in such a manner that the air is taken in at the ends through fans mounted on the rotor shaft which discharge it over the end connections of the armature coils into the bottom of the machine, whence it passes through the ventilating ducts of the core to an opening at the top. This patented system of ventilation is most efficient.

The switchboard is located on the same floor as the turbines and consists of two panels controlling the exciters, two panels for the main turbo-generators, one (1) panel for a Tirrill regulator, seven panels for the power circuits and one (1) panel connected to the lighting circuits.

This switchboard has a complete equipment of instruments and all switches are oil immersed, except the main generator switches, which are solenoid operated circuit breakers. The feeder mains are carried underground to each mill through fiber conduits.

Taken all in all, this plant is very complete, being so designed as to secure both maximum economy and low operating costs. The plans for it were made and its construction superintended by S. M. Green, Consulting Engineer, of Holyoke, Mass.

Spain has 2,614,500 cotton spindles and 68,300 cotton looms, 66,200 woolen spindles and 8,000 looms.

HUMIDIFICATION VS. MOISTENING.

The subject of humidification continues to unfold perplexities for the average mill superintendent. In some climates textile operations proceed smoothly and uniformly; while in other places artificial methods of air moistening, applied so as to produce the same hygrometer readings in the mill, give most unsatisfactory results. The true cause of this incongruity is found in the fact that the hygrometer shows the average condition of the passing air, and does not respond to momentary variations; so it is one thing to operate a mill in a climate where humidity changes are gradual and moderate, and quite another to moisten the air in the mill room by sprays of water at various points, and trust to accidental currents of air from moving machinery to distribute the moisture uniformly.

Natural moisture, or humidity, is not due to the presence of fine globules of water in the air, but to the presence of water vapor. To humidify the air, the particles of water from a spray must be actually evaporated. A drop floating in the air will not evaporate unless the air in contact with it can take up more vapor. In quiet air each drop of water saturates the air around it, and then floats on as a drop of reduced size, falling slowly. Evidently the air about a spray is wet in spots, but humidified only as it is able to evaporate the sprayed water into vapor.

A well-known principle, known to every housekeeper, is the increase of evaporation in a breeze or air current. One result of this principle is that a current at a given speed over wet surfaces at given temperature, will tend to evaporate to a definite degree of humidity, and practically cease to take up more vapor when this point is reached. This is the principle of the automatic Bell humidifier.

These humidifiers are made in separate units, each having a fan (motor or belt-operated), and a set of surfaces moistened by a small stream of water under low pressure. Erection is easy, each machine being self-contained, and shipped ready to secure to the mill ceiling by four bolts. There are no huge air-ducts to obstruct space and light, or high-pressure pipe lines, or accurate levels to be disturbed if a new mill building settles unequally, or central compressors or pump whose disarrangement will shut down the whole system, or delicate regulators and valves to control the moisture delivered to the air. The net result is a system which produces not merely sufficient moisture, but a properly humidified atmosphere at all times.

A MACHINE FOR NUMBERING PIECES IN THE FINISHING ROOM.

The marking of pieces to indicate the style number, piece number, length, weight, loom number and other details is of very great importance in the manufacture of tex-

FIG. 1.

tile goods and particularly of wool goods. It enables any imperfections that may be discovered during the process of finishing to be located at once and prompt measures taken to remedy it. It also enables a record of the piece, including woven length and weight, to be made along with the finished length and weight on the finishing book. In fact, such numbering is indispensable in the finishing room of every well-managed mill. Heretofore this work has usually been done by hand. It requires considerable skill and it is only after many months of constant practice that a girl is able to mark pieces so that the marks will stand the wear and tear of the finishing and dyeing processes and be

legible after the pieces are finished. Such an operator is highly prized. There necessarily can be but few of them in a mill and every finisher knows of the trouble caused by the occasional necessity of putting an untrained girl on this work.

For these reasons the numbering machine, shown at Fig. 1, and sold by the Durbrow & Hearne Mfg. Co., 12 Wooster St., New York, is of especial interest. It marks the pieces plainly and rapidly, very little training being required for operating it. A sample of the work is shown at Fig. 2, which illustrates the capacity for forming any kind of characters. It is adapted for marking

FIG. 2.

with yarn, varying widely in size so as to suit different requirements.

This machine has been in use for years in a large number of American mills and the reports from it are uniformly satisfactory. Following are typical extracts from letters written by users of this machine:

The numbering machine is operated by a boy to whom we pay a small salary and who does the work of three girls.

We have used your numbering machines for several years and have never regretted adopting them.

The numbering machine saves a large amount of time besides doing much neater and more accurate work.

We would not think of getting along without the machine or one similar to it.

We find the numbering machine the only feasible means of enabling a piece to be followed through with a consecutive number; all other methods have failed in some particular.

We feel that your numbering machine is one of the most useful machines we have in our mill.

The numbering machines we are using in our grey room are giving the best of satisfaction.

The numbering machine has given us excellent satisfaction without any trouble or inferior work whatever.

We have used your numbering machines for about 15 years and find them all you claim them to be in every respect.

The numbering machine is giving us entire satisfaction and it is doing our work perfectly.

We would very much dislike to have you go back to our old system of numbering by hand.

These statements by users of the numbering machine show plainly that it is a success in every respect and that no mill marking its goods can afford to neglect to investigate it.

Further information can be obtained from the Durbrow & Hearne Mfg. Co., who also sell improved pinking and counting machines, which we will describe in early issues.

A SIZE BOX FOR A SIZING MACHINE.

A box in which the size is prepared for sizing machines has recently been patented in this country by the English inventor, who describes it as follows:

It is a matter of considerable importance that the size in the sow-box of a sizing or slashing machine should be properly boiled or cooked, and that there should be uniform-

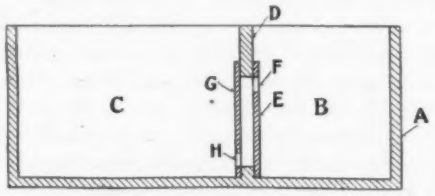


FIG. 1.

ity in its application to the yarn. At present, the sow-box is usually divided into two compartments, one larger than the other, by means of a partition, which crosses the box. A small passage or space is left near the bottom of the box, so that the size, as it is fed into the box, passes through the first compartment, in which there is a perforated steam pipe for boiling the size, then through a small passage or space at the bottom of the partition into the larger compartment containing the immersion, sizing and pressure rollers, and in which there is also a perforated steam pipe for boiling purposes.

The object of this indirect feeding of the

size into the trough is to enable the size to be properly boiled, and in fit condition for sizing the yarn. This object is, however, only inefficiently attained, for the raw size entering the box, by reason of its greater specific gravity, falls to the bottom, and immediately makes its way through the said passage into the larger compartment. The size is thus, not strictly speaking, throughout its entire bulk, of the same specific density or consistency, the result being that the warp especially in the case of heavy sizing receives more of its share in some parts and less in others.

The present invention is intended to insure equal distribution of the size over the surface of the yarn. For this purpose, instead of the said passage or space at or near the

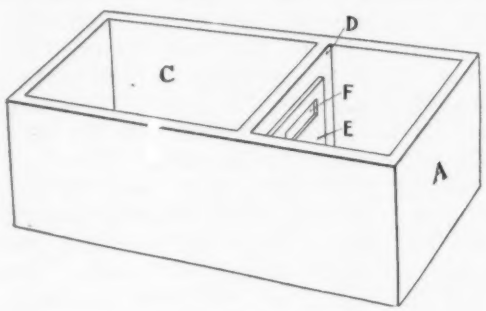


FIG. 2.

bottom of the division wall of the size-box, a much larger hole, preferably square, is cut and covered by attaching to the division wall two metal plates, preferably of copper. One of these plates is fixed against the division wall so as to cover the square hole on one side and the other on the other side. Prior to the plates being fixed to the trough, a horizontal slot is cut in the top of the plate, which is fixed on one side, and a similar slot in the plate, which is placed against the hole in the division wall on the opposite side of the sow-box, but close to the bottom instead of at the top of the plate. The size, before leaving one compartment and entering the other, is thus caused to rise to a certain level determined by the height of the slot in the plate, then has to pass down the passage or space between the two plates, before it finally emerges through the slot close to the bottom of the second plate, and enters the other compartment. In some instances, the box may be suitably constructed on these lines without the use of the metal plates.

Fig. 1 is a longitudinal section; Fig. 2, a perspective view of the improved box.

A is the sow-box, which is divided into two compartments, B C, by the partition, D, but in lieu of the size being allowed to pass direct into one compartment from the other, through a small opening at the bottom of the trough as usual, the division wall of the trough is so constructed by the formation of a vertical passage and an upper and lower slot on each side, as to cause the size to ascend to any required height and then descend through the said internal passage in the division wall, before it will be permitted to pass into the adjacent compartment. For this purpose, a large square or rectangular hole is cut in the partition, D, and two copper plates, E G, fixed on each side of this hole. The plate, E, which is fixed at the side of the partition or division wall in the division wall in the smaller compartment, has a horizontal slot, F, near the top edge. The plate, G, which is fixed to the face of the division wall in the larger compartment, has a similars lot, H, formed in it, but in this case, the slot is at or near the bottom of the trough. The size, which enters from the back, thus rises to the height of the slot in the small compartment, and passes down passage, J, between the adjacent plates, before it can emerge through the opening, H, at the bottom. This insures the size being properly boiled and in excellent condition for application to the yarn.

Egyptian cotton, on account of its long, strong and silky staple, is especially adapted for sewing thread, fine underwear and hosiery and for other goods requiring smooth finish or high luster.

The number of cotton factories in Germany in 1906 were 14,697, in which 875,000 persons were employed. The annual wages amounted to $155,890,000. The cotton trade in all its branches probably furnishes livelihood to 1,000,000 persons.

Dyeing, Bleaching, Printing, Etc.

THE DYEING OF WORSTED TOP.

BY L. HELLEWELL.

Worsted tops may be dyed either in the top or hank. A certain amount of felting is unavoidable in hank dyeing and this with the trouble of unwinding and balling again has called into existence numerous machines for dyeing in the top. The principle of top dyeing machines is that the top is kept stationary while the dye liquor is pumped through it. The Obermaier machine is the best known. It consists of a movable copper cylinder, bearing on its circumference 15 to 20 conical receptacles for the tops. The cylinder stands in the vat which is heated by steam and which communicates with a centrifugal pump. The receptacles of the revolving cylinders are first filled with tops and closed with perforated copper lids. The cylinder is then placed in position in the vat, the steam is turned on and the pump set in motion, causing the liquor to circulate from the vat through the tops and back into the vat. When the dyeing is finished the whole cylinder is lifted out with the crane and the tops are taken out, extracted, put back again and dried by drawing a current of hot air through the cylinder.

Another type of top dyeing machine is the Salt & Stead. In this the top balls are placed in a vat with their centers directly over a pipe connected with a centrifugal pump, the liquor being drawn through the top and back into the vat. Notwithstanding the introduction of top dyeing a large quantity of slubbing is dyed in the hank either on sticks in an open pan or in dyeing machines, or they are packed in layers in one of the circulating or suction pans.

The ordinary open vat for yarn is the oldest appliance for slub dyeing. The slubbing is usually entered at the boil, the steam being always shut off during the dyeing. The top of the vat is made to stand at working height (2 ft., 3 in., above floor level). The width of the pan is about 3 feet, the length and width being adjusted to the quantity of material to be dyed. The slubbing is suspended on sticks. Care must be taken in turning them. The wool should be lifted slowly about a foot and the sticks moved slowly when sliding. In dyeing acid and soluble colors the slubbing should be turned three times, sliding the sticks backwards and forwards and lifting the last stick over between each turn. The sticks should then be opened out and allowed to stand for 10 minutes. They should then be turned, slid again and left to stand for another 10 minutes. The wool should now be matched either by taking bits off or by lifting out one of the middle sticks. In using alizarine and other insoluble dyestuffs the liquor is boiled up with half the necessary quantity of dyestuff. Three turns should be given each time and the sticks should be lifted into the frame. Each hank should then be turned inside out on the stick and the remainder of the dyestuff added to the pan, then re-enter the slubbing, turn twice and leave standing 15 minutes; turn and slide again, and let stand another 15 minutes. Then lift a stick out for matching. These pans are not suitable for the dark alizarine and cyanine shades, which are dyed much better in machines or in pans that can be gradually raised to the boil and kept boiling. The rotary dyeing machines give excellent results, particularly in dyeing fine botanies, the colors being level and the yarn dyed through.

The Schmidt dyeing machine is suitable for crossbred yarn. It consists of two round vats which fit in each other, the outer vat holding the dye liquor and the inner the slubbing. The inner vat is open at the top and has a number of small openings at the bottom. The material is enclosed with copper wire sieves. On the bottom of the outer vessel a steam coil is fixed, around which the liquor must pass in rising. Between the bottom of the two vats a paddle wheel is placed which is rotated by bevel wheels driven by a pulley. The rotation of this

wheel forces the liquor up; on reaching the rim of the inner vat it flows over. A small pan and pipe are fixed to the side for the addition of extra dyestuff, which is emptied near the arms of the wheel at the bottom of the vat. A wooden pan 8 ft. 6 by 4 ft. 6 in. by 4 ft. 6 in. enclosing another pan 6 inches smaller, is used for dyeing slubbing in the hank. This will dye from 400 to 500 pounds of wool. The perforated steam pipe runs on each side at tht bottom of the outer pan. A 4 inch pipe with open ends is fixed inside at one end of the outer pan, one end of the pipe being over the nozzle of a 2 inch steam pipe at the bottom. The other end of the pipe is turned to empty itself into the inner pan. In operating fill the pan with liquor within 2 inches of the top of the inner pan and turn on the steam through the 4 inch open pipe. This lifts the liquor, the circulation being made complete by steam pipes at the side. The slubbing should be packed in layers and covered with canvas cloth to prevent matting.

A good type has an inner pan with a centrifugal pump fixed to pump the dye from the bottom of the outer pan. This vessel allows a large volume of water to flow over the wool. The machines vary in capacity and utility, for the concentration of the dye bath is of considerable importance in dyeing. When there is a small quantity of liquor it becomes more difficult to obtain level and solid shades.

The washing after mordanting and dyeing is, except in using the ordinary pan, done in the dyeing machine. The mordant or dye liquor is pumped up or run off and the machine is then filled with water and run around until clean. In the pans or machines having centrifugal pumps the mordant or dye liquor is also pumped up or run off. The pan is then filled with water which the pump circulates through the slubbing. In washing the yarn in an ordinary pan the sticks are lifted into a frame which keeps them 2 inches apart and the water is played on the top with a hose pipe until the liquor runs clear. When the sliver is very loose, as in the case of mohair, the hose should have a large rose at the end. A perforated board placed over the frame will prevent the disarrangement of fibers. Another method is to enter the slubbing into a separate pan filled with water, giving one or two turns as required.

The hydro-extractor can be used for washing; water is run into the body of the cage while the machine is in motion. The hydro is the best appliance for removing water from the material. Wringing and the use of squeezing machines are not as satisfactory, as they break or mat the slubbing.

The best way to dry wool is to place it in the open air, but as this requires considerable time and depends on the weather it is not very convenient, the usual way being to dry by artificial means. From the top drying machines the tops are lifted out into the hydro-extractor and after being extracted are replaced in the dyeing machines while a current of hot air is circulated through the tops. Tops in the hank are hung from poles in stoves heated from the top of the boiler or from rows of steam pipes. A good form of machine is a stove with a frame to run backwards and forwards. One-half the frame is in the stove drying while the other half is being emptied or filled. The stove is heated by steam pipes laid at the bottom. Fans at the side circulate the air and a suction fan fixed at the top in conjunction with an air-hole at the bottom of the machine causes a current of air to go up.

The continuous drying machines consist of an arrangement by which sticks holding hanks are carried on endless chains through machines heated with hot air. After drying, the slubbing is put through gill boxes and rewound; one set of gill boxes will turn off from 300 to 500 pounds per day according to quality.

The usual method is for a spinner to have a stock of standard shades; some large English spinners have as many as 200 to 300 of these. Such a provision makes it possible to match any shade, the wool being mixed in the drawing. The bulk of the worsted tops are dyed black to be used for greys, fancies and solids. Navy blue is also used in large quantities for fancies and solids. The quantity of other colors vary according to fashion. Bright colors are usually used for hosiery, costume and dress goods or overchecking and the darker and more sombre shades chiefly for suitings, etc.

The blacks are dyed to suit different finishes. Logwood black is the oldest and still one of the cheapest blacks, giving good results when dyed on a chrome and copper mordant.

Recipe for logwood black:

100 lbs. wool mordant with
1½ lbs. bichromate of soda.
½ lb. copper sulphate.
2 lbs. formic acid.

Dye with

60 lbs. logwood chips.
15 lbs. fustic chips.
½ lb. formic acid.

The logwood bath gives clearer results if kept slightly acid.

Alizarine is the fastest black, but is expensive and requires much scouring to get it clean. This is dyed on chrome mordant and chromed off, or dyed first and then chromed.

Recipe for alizarine black:

100 lbs. wool.
5 lbs. bichromate of soda.

Wash off well and pump up the chrome bath. Dye with the alizarine black with

4 per cent. of Acetic acid,

chroming off with the pumped up chrome bath. As an alternative dye first with

Alizarine black,
4 lbs. acetic acid, chroming off with
2 lbs. chrome,
¾ lb. sulphuric acid.

According to Chinese history Si-ling chi, wife of Hoang-ti, was the first person who discovered and raised the silk worm, about 4,000 years ago. She was honored by being named the "Goddess of the Silk Worms."

With the exception of the dog, no animal has so wide a range as the sheep, extending from Iceland to the Equator, and from a few degrees south of it to the southernmost part of South America.

It is said that the yarn production of Verviers is over 40,000,000 pounds yearly.

The textile industry of Australia furnishes a livelihood to over 800,000 persons.

REDDISH SHADE ON OXIDIZED BLACK.

BY WATKINS.

Seeing quite a number of inquiries in your magazine regarding a red shade on oxidized black, I have concluded to explain for the benefit of your readers a method of coloring this black which I have used with great success for several years. I am sending under separate cover a sample of the dyed goods which you can show to any of your readers who may be interested in the subject.

I have never found the heat to cause any trouble, the difficulty being due mainly to too large a quantity of one of the chemicals used. A great deal of trouble is caused by too little moisture in the cage room at the beginning. Moisture, as well as heat, has to be considered, as some dyers have a large steam jet in the cage room. This is not necessary if the ventilation slide is worked according to instructions. I have used the following formula for the past six years and have never had any trouble with red shades:

Solution No. 1.

135 lbs. aniline salt.
6 lbs. corn starch.

Dissolve the aniline salt in hot water in about fire buckets of water; cool down to about 250 lbs. Dissolve the starch in cold water and add to the aniline salt; the total weight to be 300 lbs.

Solution No. 2:

8 lbs. chlorate of soda.
12 lbs. chlorate of potash.
22 lbs. ground alum.
5 lbs. blue stone.

Dissolve the chlorates in boiling water and let cool. Dissolve the alum in a separate vessel and let this cool; also dissolve the blue stone and mix all three together making the 300 lbs.

Put solution 1 in the tom tom and add solution 2. This is for 100 pounds of material.

Run goods in tom tom for 40 minutes. Take the goods out of tom tom leaving from 50 to 55 lbs. of the liquor in them. The goods are entered in the tom tom dry and should weigh from 150 to 155 lbs. after extracting. The temperature of the cage

should be raised to 135° F. before the goods are entered. As the goods are cold when entered they will naturally lower the temperature to the required point.

Enter goods in cage and run for about 3 1/2 hours at 120° to 125° F. A certain amount of moisture will accumulate in the cage room and must be held if good results are desired. If the day is clear and dry it will not be necessary to open the ventilator to let out the moisture. Before the goods turn green, which should be in about 3 1/2 hours, the moisture can be let out, and the goods again oxidized at 115° to 120° F. for about 4 hours more. If the goods are to be lisled, drop the heat to 100° or 105° F., according to weight, and then lisle until the required finish is obtained. If the day is damp and cloudy, open the ventilator in cage room as soon as goods are entered, so as to let out a little of the moisture. If this is not done too much moisture will accumulate, and it will take the goods longer to oxidize. After the lisling process take the goods out of the cage, put on racks and let them hang all night, finishing with the following solution:

3½ lbs. bichromate of soda.
5 lbs. ground alum.

Enter the goods at 145° F. and run for 20 minutes, then add 1 quart of acetic acid and run for 20 minutes longer. After washing goods soften with 4 gallons of the following solution:

30 lbs. olive soap.
4 gals. olive oil.
5 lbs. sal-soda.

Mix in a barrel and boil for about 15 minutes and make 50 gallons, using 4 gallons for every 100 pounds of material.

If the above instructions are carried out there will be no trouble with red shades. For succeeding lots mix solutions 1 and 2 and hold in stock. For succeeding 100 pound lots use 25 pounds of each solution. If the liquor is getting too low add a few pounds extra of each solution. It is better to weigh liquor and add the same weight as is left in goods after being extracted.

If the dyer desires to use his own formula for the aniline salts and other chemicals, use the same bichromate, alum and acetic acid to finish and this will prevent the red shades from appearing.

RECOVERY OF CAUSTIC SODA IN MERCERIZING.

BY H. D. ROBERTS.

(In the Journal of the Society of Dyers and Colorists.)

Since the introduction of the mercerizing process it has been the aim of the more thoughtful men engaged in this work to recover as much as possible of the caustic from the cloth, and of the highest degree of concentration practicable. Those who have not studied the problem are now driven by keen competition to give the matter serious consideration, with a view to reducing the cost of the process. Among methods in use probably one of the simplest and most widely used, and certainly one of the most effectual, is that which is the subject of the patent taken out by the Calico Printers' Association and W. Warr. The arrangement is made by Messrs. Mather & Platt, Salford.

The mercerizing machine consists of the usual stentering frame, to which are attached several sets of smooth-edged doctors or scrapers in pairs, one above and one below the cloth, stretching across the width of the cloth at right angles to it, and which adapt themselves to the varying widths to which the machine may be set. The doctors of each pair press on the cloth, the one above a little before the one below. Beneath each pair of doctors is a cistern to collect the recovered lye.

Where the cloth is finally nipped a limited supply of hot water, about 100° to 120° F., is sprayed, and the washings collected in a trough underneath the nip, the washing obtained registering 3° to 4° Tw. From this trough the washings are heated and pumped or injected to the front of the nearest set of doctors, and allowed to fall gently on to the cloth, being carried along till it meets the upper doctor, when it is forced through, being removed by the lower doctor and collected in cistern No. 3, registering 7° to 10° Tw. This liquor is heated and then conveyed

as before to the next set of doctors, where it again passes through the cloth and is collected in cistern No. 2 and stands at 13° to 18° Tw.; thus again to the first set of doctors, which are fixed close to the beginning of the frame, the liquor obtained being from 24° to 32° Tw. Thus all the caustic is recovered with the exception of a small amount of about 1° Tw. carried away by the cloth when it leaves the nip at the end of the machine.

A machine of the above description the writer has seen working for over three years, giving first-class results with every class of cloth. For the purpose of concentration the best way appears to be to collect the stronger washings, obtaining a liquor of about 24° Tw., boil with slaked lime to decarbonate, and concentrate to 60° Tw.

A quantity of the weaker liquors may be employed for dissolving solid caustic to renew stock for mercerizing, thereby utilizing the whole of the recovered caustic. Of course if desired the liquors can be used for kier boiling in the bleach-house, since if the liquors are mixed they yield caustic of a strength of 13° to 16° Tw.

DISCHARGING INDIGO.

At present white patterns are obtained on an indigo ground almost exclusively by the action of oxidizing agents, especially chromates, which always tender the fiber more or less. Discharges for the purpose which depend upon reduction are practically unknown. It is true that it has been proposed to use a mixture of zinc dust and sodium sulphite and actine, but the process has three very serious disadvantages. One is that at least an hour's steaming is required to bring out the reducing action. Another is that the formation of a vat cannot be dispensed with, and in the third place the discharge color, in consequence of the large amount of zinc dust it contains, clogs the grooves of the printing rollers. The mixture is very unstable, besides.

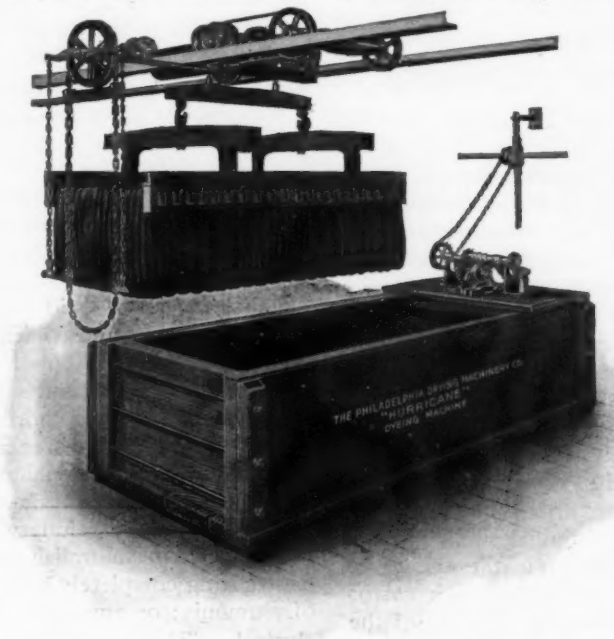
Hydrosulphite NF provides a means whereby even the deepest indigo dyeings can be discharged perfectly white. The following is an illustrative recipe for discharging a medium indigo tint: Print with a mixture of 6 lbs. of Hydrosulphite and 14 lbs. of gum solution (1 in 1), dry and steam with air free steam for three minutes from 226° to 240° F. The printed places will then show a pale green color, due to the formation of indigo white, so that the blue is regenerated by exposure to the air, and more quickly by washing in either cold or warm water. Hence it is necessary to remove the indigo white, and this is begun by means of an alkaline bath, such as caustic soda lye of 10° B., or water glass of 10° B., which dissolves the indigo white and forms a dilute bath. Still the removal of the leuco compound is not complete, so that if the goods are rinsed at this stage they will show a pattern of paler blue than the ground. The residue of the indigo white is removed by a boiling solution of 2 lbs. of soap in 100 gallons of water, and a perfectly white and permanent pattern is obtained.

An improvement on this process is to incorporate the soap with the printing color, as a saving in soap can thereby be effected. The printing color is then made by heating on the water bath a mixture of 12 lbs. of gum solution (1 in 1), 8 lbs. of Hydrosulphite NF, and 2 lbs. of soft soap. When all the soap is dissolved, allow to cool, and print on. After steaming with air free steam for three minutes, at from 108° to 110° C., the goods are immediately rinsed in boiling water. A perfect white is the result, and there is not the least danger of any tendering of the fiber.

The advantage of this process over those already known is that the solvents used in the latter are unable to completely dissolve the indigo white formed, so that either a vat is formed (when alkaline solvents are used), or the discharged places color again subsequently, as when acetine is used. The saving in steaming time too is a matter of great importance. Again, the indigo removed from the discharged places is readily recovered. The indigo collects in the froth on the surface of the boiling rinse, and can easily be skimmed off for use again.—The Dyer and Calico Printer.

BETTER DYEING AT LESS COST.

Competition, during periods of depression, possess certain advantages in that it eliminates the old-fashioned, laborious methods and necessitates the use of the most up-to-date and economical machinery. The "Hurricane" circulating dyeing machine, illustrated herewith, is built by the Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, who offer it to the trade as an efficient means of obtaining uniform results in dyeing at the lowest cost for labor, steam, dyestuffs and operating expenses.



THE "HURRICANE" CIRCULATING DYEING MACHINE.

Although the machine is adapted to any class of work, the method of operating will be briefly described as applied to the sulphur process. It is now generally recognized that the best results are secured when the material to be dyed is kept under the liquor during the entire dyeing operation.

The yarn frame is loaded ordinarily with about three hundred pounds of skein yarn, then lowered bodily into the dye tub, where a positive circulation of the dye liquor is secured by means of propellers. Thorough and uniform dyeing is assured by the alternate upward and downward circulation of the dye liquor, this reversal of the current being controlled automatically by the machine. The current is just strong enough, when flowing upward, to raise the yarn off the sticks and permit the dye liquor to penetrate the material.

The first machine is provided with an iron tub and the fittings throughout are of iron, but after the dyeing is completed, the frame full of yarn is transferred bodily along the overhead trolley and lowered immediately into the second machine, where the washing is done. In this second instance a wooden tub is employed, thorough washing being accomplished by the positive circulation of the water alternately in opposite directions. In lifting and transferring the frame full of yarn, the great convenience of the improved pneumatic hoist is fully appreciated, and it is remarkable how quickly and with what ease this work is accomplished.

Practical dyers will see at once what a contrast there is between this system and

the older methods, which require considerably more steam and dyestuffs to produce as good results on a given quantity of material. Uniform distribution of the dye liquor insures perfect dyeing and this is, no doubt, the reason why this type of machine is now being so generally adopted for raw stock, hosiery, etc.; in the latter case, it is necessary, of course, to have a cage or basket to accommodate the material, and hinged doors in the top and bottom, for convenience in loading and unloading.

SOLUBLE OIL AND ITS ANALYSIS.

BY DR. LOUIS J. MATOS.

The enormous consumption in the textile industries of the so-called soluble oils is a matter of no surprise when one considers the many uses to which they are applied, particularly in the treatment of cotton in nearly all stages of manufacture, although oils of this character find considerable application in the preparation of various types of liquid and paste finishes for fabrics other than cotton.

Formerly the only type of soluble oil familiar to the textile worker was Turkey red oil, a usually clear article made entirely from castor oil, the original use of which was as a valuable adjunct in the dyeing or printing of Turkey reds. Although castor oil was always prescribed as the base of the compound, satisfactory products were also obtained by using olive oil, but it seems that the manufacturers confine themselves almost wholly to castor oil.

The commercial soluble oils of today, however, are compounded according to a variety of formulae, in some of which cotton seed oil, corn oil, or peanut oil may be called for, and although the general method of treatment is practically the same, by far the best and most satisfactory results are always to be obtained from castor oil. The finished product, when properly made, is a most excellent article.

The process in general is somewhat simple, but like every chemical operation, certain attention to details is necessary in order that the yield and quality should be satisfactory. To make a soluble oil, a given quantity of good castor oil is taken, and into it is allowed to run a quantity of concentrated sulphuric acid, in a thin stream, during which the oil is constantly stirred so that the acid should be thoroughly mixed with the oil, the workman observing from time to time with a thermometer that the temperature does not increase above 95° F. Any increase above this temperature will cause a destruction of some of the oil with a corresponding shrinkage in the yield of the finished product.

Usually the quantity of acid requires several hours to run into the oil. After the acid has been mixed the oil is then allowed to stand for several hours, but preferably over night, so as to insure complete reaction between acid and oil.

The next operation is to separate from the oil the excess of acid that is necessarily always present, and which is effected by washing the acidified oil with about an equal volume of a 10 per cent. salt solution, twice repeated, and stirring thoroughly. The salt solution takes up the free acid without dissolving any of the sulphated oil. The salt solution is now drawn off, while the remaining oil is treated carefully with a solution of caustic soda to neutralize nearly the oil and neutralizing completely by a further addition of ammonia; or ammonia may be used exclusively. The end of the neutralization is indicated when a piece of red litmus paper is turned blue.

The resulting oil should now be perfectly clear, of a pale yellow color, and be completely soluble in water. If mixtures of other oils, with or without castor oil are made use of, the resulting product, while soluble in water, may present some objections, the most important of which is a tendency to separate a curd or cheese-like mass, which is of course a disadvantage.

Soluble oils are usually made and sold of various strengths, some containing as low as 25 per cent. of oil, and others may run as high as 75 per cent. As a rule, a 60 per cent. standard gives a very satisfactory and

universally applicable oil that is a general favorite where good grades of mill supplies are used.

The term "percentage" of oil does not mean a given percentage of raw oil used in the batch, but refers to the percentage of sulphated oil contained in the finished article.

The following figures represent the actual quantities of the several materials necessary to manufacture a good grade of oil, and on a sufficiently large scale to enable a mill to turn out their own product in quantity.

Castor Oil ..... 100 gals.
Sulphuric Acid, 66° .... 160 lbs.
10% Salt Solution ..... 150 gals.

(This is made by dissolving 133 lbs. of common salt in water to make 150 gals., and should stand at 15° Tw.)

Ammonia, 21° ..... 12 to 18 gals.

This latter is used in such quantity only to "kill"' or neutralize the "sulphated oil," thereby making an ammonia compound. If all the free sulphuric acid is not completely washed out with the brine solution, then some ammonia will be lost, consequently it is always best to ensure perfect salt washing.

TESTS FOR SOLUBLE OILS.

The preliminary tests for soluble oils are very simple. The oil should react slightly alkaline—that is, should change red litmus paper promptly blue. When a small portion is mixed with water it should either dissolve completely or at most show only a slight cloudiness. No distinct oil drops should appear inside of three or four hours, and these drops should be immediately soluble in ammonia, otherwise the presence of unchanged (non-sulphated) oil is to be suspected, and if such an oil is used on woven goods, a distinct odor will always remain.

The two principal tests for a soluble oil is to ascertain the total oil and the water, to do which requires a few simple pieces of apparatus.

TOTAL OIL.

Take 100 cubic centimetres of the oil, and mix in a graduated cylinder with 20 ccs. concentrated hydrochloric acid. Then dilute with a saturated solution of common salt to 5500 ccs. Shake frequently. Let stand in a warm place. When the free sulphated oil rises to the surface of the salt solution, the volume in cubic centimeters may be read directly. This method is not absolutely correct, but answers all practical purposes.

WATER.

The amount of water contained in a sample of soluble oil is determined by weighing 10 grams of the oil and melting with 25 grams of dry paraffine wax in about 75 ccs. of salt solution. Let cool, and remove the wax cake which is then dried and weighed. The increase in the weight of the wax represents the oil, which, deducted from 10 (or the original weight of sample taken) gives the amount of water in the sample.

The complete analysis of a sample of soluble oil is seldom required except for certain purposes, and the method employed need not be given here, but can be found in treatises on mill chemistry.

THE DYEING OF ANILINE BLACK.

In the June number of the Journal of the Society of Dyers and Colorists, Dr. Boettiger contributes a paper on the subjects of the by-products formed in aniline black dyeing, which will be read with exceptional interest by all occupied in this branch of the dyeing trade. In this paper he refers to an address recently given by Dr. Marsden before the Society on "The Constitution of Aniline Black," and to the question which was then raised as to the nature of the red substance which is formed during the dyeing of aniline black, and which is found to dye, or sully, the whites in printed goods. Dr. Boettiger points out that it was suggested that the color in question was mauveine, but that no proofs were adduced in support of the statement. He continues that from the practical point of view of aniline black dyeing and printing it is of the greatest importance to gain a clear insight into the nature of this red by-product in order as far as possible to enable its formation to be prevented, and so do away with its spoiling the whites, and deteriorating the quality of the black The au-

thor has frequently had occasion to investigate this problem, both on the large scale and in the works laboratory, and gives us the observations he has made, and the conclusions he has come to, regarding it.

The red, or more correctly speaking, the violet red, coloring matter which is observed in soaping or washing is in his opinion indeed a mauveine. It can easily be obtained by extracting aniline black dyed color (it is immaterial whether it is a single bath, aged, or steam black) with alcohol, or better still, in water acidulated with hydrochloric acid. On evaporating the aqueous extract to dryness, the hydrochloride of the pseudo mauveine remains as a blackish-green mass with a bronzy reflex, readily soluble in alcohol with a reddish-violet color. In concentrated sulphuric acid the dyestuff dissolves with a dirty green color which passes on diluting through blue to violet. Reduction with zinc dust and ammonia yields a colorless solution which at once becomes violet again on exposure to the air. From the solution of the coloring matter caustic soda throws down a light violet precipitate. On cotton nitric acid changes the violet to yellowish green. Lastly the hydrochloride yields with platinum chloride a yellow double salt.

These reactions, as also the properties of the shades obtained on cotton, wool and silk, leave no room for doubting that the violet dyestuff is a mauveine. Having thus ascertained the chemical nature of the red violet by-product the two further questions as to its formation in the aniline black process and the best means for preventing this are now readily answered. Pseudo-mauveine is formed, according to Perkin, by the action of various oxidizing agents, especially chromine acid, or aniline. Now aniline is always present in smaller or larger amount in the cotton after the oxidation has gone so far as the green stage, as has been shown on a previous occasion.

This unoxidized aniline yields pseudo-mauveine on chroming. It should therefore be possible to prevent the formation of the mauveine by washing the greened cotton well before chroming, as is sometimes practised in the dyeing of half silk ribbons. This mode of procedure is, however, generally impracticable, as the black would turn out too thin, uneven, and too liable to green. But even if this procedure be adopted a black is obtained which, though containing less pseudo-mauveine than the cotton which has not been washed, nevertheless is found to contain a small amount of violet. It is thus proved that it is also formed from the oxidation product of aniline which has been fixed on the fiber (i. e., from emeraldine), and chromic acid. The latter oxidizing agent is not even necessary since the greened cotton, after washing, also yields a small amount of pseudo-mauveine to water or prolonged boiling. The formation of this small amount of violet dyestuff cannot thereof be prevented in dyeing or printing. But the bulk of the dyestuff which is formed from the unchanging aniline salt in the fiber in the chroming process can be reduced to a minimum by converting in the first place as much aniline salt as possible into emeraldine in the ageing process, and secondly by observing certain precautions in the chroming. All other factors which might come into consideration, such as the acidity, or basicity, of the aniline black liquor, or the amounts of ingredients other than sodium chlorate, and bichromate, have no influence on the formation of the pseudo-mauveine.

In order to comply with the first condition, viz, to convert as much aniline salt as possible into green emeraldine, it is only necessary to raise the amount of chlorate in the black padding liquor, and to age at a high temperature. It is, however, well known to all practical dyers that these two deviations incur considerable risk, and tender the cotton fiber. In practice, therefore, the theoretical amount of sodium chlorate (93 parts aniline requires 35.5 parts of sodium chlorate for the formation of aniline black) is seldom exceeded; and if it is complaints of tendered goods are made. With regard to the amount of chlorate there is therefore a limit which is represented by 32 to 33 parts of sodium chlorate to 93 parts of aniline.

There is also a limit to the temperature employed in ageing, which should not exceed 55° C. The employment of a temperature higher than this is less liable to do harm than the use of too much chlorate, providing

the noxious hydrochloric fumes and the oxides of chlorine are efficiently drawn off from the chamber. But even where these limits are used a considerable amount of pseudo-mauveine is formed.

It is only by regulating the chroming process that it is possible to reduce the formation of mauveine to a minimum. The amount of bichromate employed is here of great importance, temperature, duration of treatment and acidity of the bath being of secondary importance only. It is a common practice to use 22 to 25 parts of bichromate of soda per 1,000 parts of the liquor by weight; an almost pure aniline black results, only traces of mauveine being formed.

DYEING KHAKI.

Waltham, Mass., Oct. 26, 1908.

Editor Textile World Record:

Since last writing you regarding comparative tests of the fastness to light and washing of American dyed khaki, I have been investigating the matter still further along the same lines and find my report to you in the first instance to be fully borne out by the later investigations.

I recently called on a dyer in a large bleach and dye works. This dyer has also been making investigations of the fastness of American dyed khaki for the benefit of the mill where he is employed. He showed me swatches of the American dyed khaki that had been exposed to sunlight for months under glass. These swatches showed no perceptible change of color after the exposure.

In order to pursue these investigations along practical lines I visited the Watertown Arsenal, U. S. Ordinance Dept., where one of the soldiers showed me a khaki blouse he had been wearing for three years and which had been washed regularly. It was in very good condition and looked as though it might be worn for some time in actual service. It would seem as if a color that will remain in good condition longer than one term of enlistment should be good enough for the War Department. Neither should it be prejudiced by the fact that it is the work of American wage earners who pays the taxes that pay the salaries of the officials of the War Department.

Yours very truly,

Daniel J. Carey.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 161.

Light Brown on Worsted Yarn.

Fast Chrome Brown 4 R N on 100 lbs. worsted yarn. Prepare the dye bath with

2 ozs. Fast Chrome Brown 4 R N.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Acetic Acid.

Enter yarn at 140° F. and dye at a boil for one hour, then add

2 lbs. Potassium Bichromate

and boil one-half hour longer.

Fast Chrome Brown 4 R N produces dyeings which are remarkably fast to sunlight, even in light shades.

Recipe No. 162.

Red on Cotton and Wool Union Cloth.

Naphtamine Fast Union Red H on 100 lbs. union cloth. Prepare the dye bath with

3 lbs. Naphtamine Fast Union Red H.
(Kalle & Co., 530 Canal St., N. Y.)
20 lbs. Common Salt.

Enter at 60° F., bring slowly to a boil and dye at a boil for 30 minutes. Then shut off steam and work for 3/4 of an hour in a gradually cooling bath.

Naphtamine Fast Union Red H will be found to be an excellent dyestuff for the dyeing of cotton and wool union material.

Recipe No. 163.

Black on Cotton Yarn.

Sulphur Black F A Extra on 100 lbs. cotton yarn. Dye in a standing bath to which the following additions have been made.

6 lbs. Sulphur Black F A Extra.
(Berlin Aniline Works, 213 Water St., N. Y.
9 lbs. Sodium Sulphide (Crystals).
2 lbs. Sodium Carbonate.
10 lbs. Common Salt.

Dye at a temperature just below the boil for one hour, keeping the material below the surface of the liquor as much as possible.

Sulphur Black F A Extra gives an excellent shade of black and possesses high coloring power.

Recipe No. 164.

Blue on Cotton Yarn.

Tetrazo Blue 4 R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Tetrazo Blue 4 R.
(American Dyewood Co., 154 William St., N. Y.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Dye at a boil for one hour.

Tetrazo Blue 4 R is valuable for the dyeing of pure reddish blues. When dyed on union material the cotton is dyed stronger than the wool. It will prove of special interest in the dyeing of artificial silk.

Recipe No. 165.

Crimson on Cotton Yarn.

Triazol Bordeaux B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Triazol Bordeaux B.
(Geisenheimer & Co., 189 Front St., N. Y.)
2 lbs. Soda Ash.
20 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Triazol Bordeaux B possesses good fastness to light and acids.

Recipe No. 166.

Yellow on Worsted Yarn.

Chrome Yellow A C on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Chrome Yellow A C.
(E. M. Thayer, 411 Atlantic Ave., Boston, Mass.)
2 lbs. Bichromate of Potash.
3 lbs. Tartar.

Enter good at 90° F., bring slowly to a boil and continue the boiling for one hour.

Chrome Yellow A C is fast to light and milling, and is particularly useful in combination with monochrome colors as it dyes easily level and feeds on at a boil.

Recipe No. 167.

Green on Cotton Yarn.

Katigen Brilliant Green G on 100 lbs. cotton yarn. Prepare the dye bath with

15 lbs. Katigen Brilliant Green G.
(Farbenfabriken Co., 66 Lafayette St., N. Y.)
15 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
50 lbs. Common Salt.

Dissolve the dyestuff together with the sodium sulphide and add to the bath which already contains the soda ash. The salt is then added and the bath boiled up. Then cool to 190° F. The material is entered and dyed for one hour at a temperature just below the boil.

Katigen Brilliant Green G possesses remarkable brilliancy for a sulphur color, and its fastness to light and washing is very good.

Recipe No. 168.

Lilac on Cotton Yarn.

Tetrazo Lilac 2 R Concentrated on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Tetrazo Lilac 2 R Conc.
(American Dyewood Co., 154 William St., N. Y.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Dye at a boil for one hour.

Tetrazo Lilac 2 R Conc. possesses excellent fastness to light. When used on union material, it dyes the wool a trifle redder than the cotton.

Recipe No. 169.

Black on Cotton Yarn.

Sulphur Black F T Extra on 100 lbs. cotton yarn. Dye in a standing bath to which the following additions have been made:

6 lbs. Sulphur Black F T Extra
(Berlin Aniline Wks., 213 Water St., N. Y.)
9 lbs. Sodium Sulphide (Crystals).
2 lbs. Sodium Carbonate.
10 lbs. Common Salt.

Dye at a temperature just below the boil for one hour, keeping the material below the surface of the liquor as much as possible.

Sulphur Black F T Extra gives an excellent shade of black and possesses high coloring power.

Recipe No. 170.

Khaki on Cotton Yarn.

Immedial Khaki G on 100 lbs. cotton yarn. Prepare the dye bath with

Starting Bath.

8 lbs. Immedial Khaki G.
(Cassella Color Co., 182 Front St., N. Y.)
8 lbs. Sodium Sulphide (Crystals).
8 lbs. Soda Ash.
40 lbs. Common Salt.

Standing Bath.

5 lbs. Immedial Khaki G.
(Cassella Color Co., 182 Front St., N. Y.)

5 lbs. Sodium Sulphide (Crystals).
1 lb. Soda Ash.
10 lbs. Common Salt.

Dye at a temperature just under the boil for one hour, keeping the material below the surface of the liquor as much as possible.

Then after-treat for 20 minutes to 1/2 hour, at a temperature of 140* F., in a bath made up with

3 lbs. Potassium Bichromate.
3 lbs. Acetic Acid.

Immedial Khaki G possesses excellent fastness to light and washing, and also possesses good leveling properties.

Recipe No. 171.

Scarlet on Cotton Yarn.

Diazo Brilliant Scarlet P R Extra on 100 lbs. cotton yarn. Prepare the dye bath with

1¾ lbs. Diazo Brilliant Scarlet P R Extra.
(Farbenfabriken Co., 66 Lafayette St., N. Y.)
10 lbs. Glauber's Salt.
1 lb. Soda Ash.

Enter yarn at 180° F. and dye at a boil for one hour. Rinse and diazotize in a cold bath made up with

2½ lbs. Sodium Nitrate.
7½ lbs. Hydrochloric Acid.

Then develop in a bath containing

1½ lbs. Developer A,

or one-half the quantity of beta naphthol dissolved in caustic soda.

Diazo Brilliant Scarlet P R Extra produces brilliant dyeings of scarlet upon cotton which possesses very good fastness to washing.

Recipe No. 172.

Light Brown on Worsted Yarn.

Fast Chrome Brown 3 R N on 100 lbs. worsted yarn. Prepare the dye bath with

2 ozs. Fast Chrome Brown 3 R N.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Acetic Acid.

Enter yarn at 140° F. and dye at a boil for one hour, then add

2 lbs. Potassium Bichromate

and boil one-half hour longer.

Fast Chrome Brown 3 R N produces dyeings which are remarkably fast to sunlight even in light shades.

Recipe No. 173.

Brown on Cotton Yarn.

Chlorazol Brown G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Chlorazol Brown G.
(Read, Holliday & Sons, 7 Platt St., N. Y.)
25 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Chlorazol Brown G gives an extremely reddish shade of brown which possesses the characteristic properties of the direct cotton colors.

Recipe No. 174.

Brown on Cotton and Wool Union Material.

Naphtamine Fast Union Brown 2 R on 100 lbs. cotton and wool cloth. Prepare the dye bath with

4 lbs. Naphtamine Fast Union Brown 2 R.
(Kalle & Co., 530 Canal St., N. Y.)
25 lbs. Common Salt.

Enter at 60° F., bring slowly to a boil, and dye at a boil for 20 minutes, then shut off the steam and work 3/4 of an hour longer.

Naphtamine Fast Union Brown 2 R will be found an excellent dyestuff for the dyeing of cotton and wool union material, dyeing both the cotton and the wool evenly, and the same depth.

Recipe No. 175.

Violet on Cotton Yarn.

Oxy Diamine Violet B F on 100 lbs. Cotton Yarn. Prepare the dye bath with

2 lbs. Oxy Diamine Violet B F.
(Cassella Color Co., 182 Front St., N. Y.)
20 lbs. Glauber's Salt.
1 lb. Soda Ash.

Enter at 180* F. and dye at a boil for one hour.

Oxy Diamine Violet B F gives very bright violet dyeings which may be diazotized and developed with beta naphthol or alpha naphthol, and thereby being converted into a dark blue possessing good fastness to washing and acids.

Recipe No. 176.

Black on Worsted Yarn.

Acid Chrome Black G on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Acid Chrome Black G.
(Klipstein & Co., 122 Pearl St., N. Y.)
10 lbs. Glauber's Salt.
10 lbs. Acetic Acid.

Boil for one hour, then add

2 lbs. Sulphuric Acid.

Boil 1/2 hour longer, and add

2½ lbs. Potassium Bichromate.

Then continue the boiling another hour.

Acid Chrome Black G will be found a good color for dyeing carbonized shoddy stock, and possesses sufficient fastness for all ordinary purposes.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

Alabama, Slocomb. Clyde Kelly of this place proposes to organize a company for the erection of a cotton mill. $35,000 has been subscribed. Mr. Kelly would like to interest experienced cotton manufacturers who would become financially interested in the project. A free site can be obtained.

*Massachusetts, Wilkinsonville. The new cotton mill, progress of which has been reported from time to time, will be known as the Army and Navy Cotton Duck Co. As suggested some weeks ago, John H. Meyer, 75 Worth St., New York, is at the head of the company. Mr. Meyer also controls the Springdale Finishing Co. at Canton, Mass., which makes a specialty of military khaki, army and navy duck and uniform cloths. It is probable that the product of the new mill will be finished at Canton. Mr. Meyer is quoted as saying that manufacturing will begin this fall.

*New York, Waterford. On October 12 construction work was started on a new yarn mill, three stories high, 229 by 105 ft., and a cotton warehouse, 100 by 100 ft., for the Kavanaugh Knitting Co. Both buildings will be completed within a few months. Ten thousand ring spindles will be installed for making 19s to 34s combed yarns for use in the knitting mill owned by this company, and also for the trade. The Kavanaugh Knitting Co. has capital stock of $100,000. C. H. Kavanaugh is president, superintendent and buyer and L. Kavanaugh is treasurer. At present 64 spring needle, 4 latch needle and 30 flat knitting machines and 200 sewing machines are operated on Egyptian and Peeler underwear. The company dyes and finishes their own goods and sells product direct.

*North Carolina, Charlotte. All the equipment for the new Savona Mfg. Co. has been purchased and is now being installed. Fancy towels, bureau scarfs, etc., will be made on 100 jacquard looms, from 5s to 30s cotton yarns. All yarns will be bought. Alexander & Garsed, machinery dealers of this place, control the mill.

Pennsylvania, Philadelphia. An application for a charter will be made on October 23 by Patrick Meehan, Mary E. Ward and Michael J. Meehan for the Ward-Meehan Co., to manufacture and bleach towels, cotton goods, etc. This company will take over and operate the mill and bleachery formerly owned by the late James B. Ward & Bro. on Hancock St., below Lehigh Ave.

South Carolina, Calhoun Falls. The Calhoun Mills now have 16,384 spindles and 400 looms which they expect to start running within the next 60 or 90 days. They are installing a 1,000 h. p. steam plant which will generate electric current with which to drive the mill. As to the contemplated addition of 10,000 more spindles and 200 looms nothing definite can be stated as to when these will be added, as it will depend altogether on trade conditions. This equipment may be added within a year or it may not be added for several years. James P. Gossett is president and treasurer and E. M. Lander is secretary. All communications should be addressed temporarily to Williamston, S. C.

*South Carolina, Olanta. At a meeting of the promoters of the proposed cotton mill very encouraging reports were given. One-third of the proposed capitalization has been subscribed without any great effort on the part of the committees. A more thorough canvas will be made at once and the committees will report at a meeting to be held at an early date. D. W. Alderman of D. W. Alderman Sons Co., dealers in yellow pine lumber, Alcolu, S. C., are at the head of the enterprise. It is not probable, as we stated some time ago, that anything will be done toward constructing a plant before the first of 1909.

*South Carolina, Woodruff. Machinery is to be installed in December in the building erected for the W. S. Gray Cotton Mills. Ten thousand spindles with preparatory machinery will be set up for manufacturing 30s yarns in single and ply, in warps, skeins and on tubes.

Enlargements and Improvements.

*Alabama, Anniston. There is no probability of an enlargement being erected to the Anniston Yarn Mill at present. If an addition is built at all it will not be started before the spring of 1909.

Connecticut, Danielson. Work has been begun on the new dam and electric plant for the Danielson Cotton Co. Particulars of this improvement have been given.

*Connecticut, Moosup. It is reported that the Aldrich Mfg. Co. is planning to build another large extension to its plant on the completion of the enlargement now in process of construction. A large number of new looms will be added. Fine cotton goods are manufactured.

*Connecticut, Plainfield. Work has already begun on the new mill for the Lawton Mills Corporation. P. H. Smith & Co. of Pawtucket, R. I., have contract for the construction work. The new building is to be 200 by 180 feet, 3 stories high and of brick construction. 24,000 new spindles and 500 looms will comprise the new machinery equipment. The building will be completed and machinery installed ready for manufacturing about July 1, 1909. An addition to the storehouse of 50 by 75 feet will be completed this fall and a new waste house, 30 by 60 feet, will also be constructed.

*Georgia, La Grange. In about 60 days the new mill to be erected by the Unity Cotton Mills will be under construction. It will practically double the old plant and it is understood will make the same lines of goods. 10,000 ring spindles, 3,000 twisting spindles and 102 broad and 30 narrow looms are operated on cotton ducks and skein yarns, product being sold through J. H. Lane & Co., 100 Worth St., New York. C. V. Truitt is pres. and buyer of the Unity Mills; Fuller E. Calloway is treas., and W. E. Johnson is supt.

Georgia, West Point. The West Point Mfg. Co. has decided to equip the entire plant with a humidifying system and has awarded the contract for the equipment to the American Moistening Co.

Maine, Saco. Construction work is progressing rapidly on the new power house being erected for the York Mfg. Co. It will be ready for use in a few weeks.

*Massachusetts, Adams. Improvements being made in the boiler house of the Renfrew Mfg. Co.'s Mill No. 5 include taking out two old boilers and setting up two new ones. The plant is working full time and expects no further curtailment in the near future. The Renfrew Mfg. Co. has capital stock of $1,200,000 and operates 24,000 ring spindles and 1,600 looms. Wm. H. Hill is president, Francis U. Stearns, treasurer, Chas. H. Thomson, superintendent and Ira S. Ball, buyer of supplies.

*Massachusetts, Blackstone. The eight new spinning frames added to the equipment of the Blackstone Mfg. Co. will complete the improvements contemplated for the present. Mulls, shirtings and fine goods are manufactured on an equipment of 49,000 ring spindles and 1,184 looms. Geo. E. Spofford is superintendent.

*Massachusetts, Fall River. Department 17 of the New England Cotton Yarn Co., otherwise known as the Globe Yarn Mill, will be closed for several months while extensive changes are in progress. Sufficient combs are to be put in to produce 100,000 pounds of yarn a week and the mill changed over to make fine goods entirely. Contract has been awarded.

Massachusetts, Fall River. Changes are being made in the carding department of No. 3 Mill of the Merchants' Mfg. Co., formerly the Crescent Mill, which will provide for manufacture of medium count goods. A total of 5,000 new spindles will be added.

Massachusetts, Lawrence. The old machinery in the card room of the Pacific Mills is being taken out and new machinery installed in its place. In connection with this improvement it is stated that 1,000 looms will be shut down for about five weeks. Some of the operatives temporarily laid off from their regular work will be given employment making alterations.

Massachusetts, Lowell. Contract for putting new water wheels in the Lawrence Mfg. Co. has been awarded to Cyrus Barton. The same firm has a contract to improve the water power of the Boott Mills.

Massachusetts, North Oxford. A 200 horsepower 30-inch Hercules water wheel has been installed in the Edwin Bartlett Co. and manufacturing has been resumed after a shut down of one week.

*Massachusetts, Southbridge. Two 800 h. p. water wheels have been installed in the Central Mills Co. A number of improvements have been made during the last few months by this company, bringing the plant thoroughly up to date in every way and giving an increase in production of about 25 per cent.

*Massachusetts, Webster. D. C. Hawley & Co., of Worcester, who have the contract to put in the foundation for the new weaving mill of S. Slater & Sons, Inc., are going ahead on the work. The structure will be 133 by 460 ft., 2 stories high. Chas. T. Main, 45 Milk St., Boston, is architect and engineer.

*Massachusetts, West Warren. No additional machinery will be required for the changes at the Warren Cotton Mills of the Thorndike Co. A rearrangement of the machinery is being made and the water power equipment improved merely to give better manufacturing facilities. P. Y. DeNormandie is treasurer, Walter B. Hall is agent and Herbert E. Davis is superintendent.

*New York, Le Roy. New machinery is being installed in the addition erected for the Le Roy Cotton Mills. The building is 125 by 350 ft. It is expected that part of the new equipment will be in operation by the middle of December.

*North Carolina, Concord. Warping and reeling machinery will be installed in the new 50 by 100 ft. addition being erected for the Young-Hartsell Mills Co. Construction work is nearly completed.

*North Carolina, Cornelius. It is reported that the Gem Yarn Mills will add 5,000 spindles with twisters in the addition being built to the plant. This company has a capital stock of $40,000 and spins 8s to 16s skein yarns. J. B. Cornelius is president and F. C. Sherrill is treasurer and buyer.

*North Carolina, East Durham. A proposed change in the power equipment of the Durham Cotton Mfg. Co. reported in August is being made. Two steam engines with eight boilers are being removed for the erection of a new boiler and engine house. The change amounts to an outlay of $75,000. Six new high pressure boilers will be installed and one new Corliss compound engine of 750 horse-power. In addition, the picker building will be remodeled and a concrete reservoir of 1,500,000 gallons' capacity will be built. Later on it is expected the improvements will necessitate the closing down of the plant for about a month.

*North Carolina, Hope Mills. In addition to other improvements reported as being made in the plant of the Hope Mills Mfg. Co., a turbo-humidifier equipment consisting of 30 heads and one 8 by 8 EE-1 Ingersoll Rand Compressor has been ordered of the G. M. Parks Co., Fitchburg.

North Carolina, Salisbury. The Kesler Mfg. Co. has completed an enlargement and it is reported that 1,000 spindles have been added, a compressed air system for cleaning machinery in every department of the mill installed, and 20 motors for distributing power. The total equipment is now 26,000 spindles and 306 broad looms.

*North Carolina, Salisbury. Construction work will be started at once on the proposed 40 by 50 ft. addition to the plant of the Vance Cotton Mills. Beam and ball warpers will be the only machinery added. Dr. F. J. Murdoch is president, and E. B. Neave is secretary, treasurer and manager.

Pennsylvania, Philadelphia. A charter has been asked for the Colonial Manufacturing Company, a new concern to be started in this city for the manufacture of textile fabrics. The incorporators are E. F. and Chas. F. Millette of Mt. Airy, Philadelphia, and Thomas J. Ward of Tioga, Philadelphia.

*Rhode Island, Albion. Within a few days the roof will be put on the new building being erected for the Valley Falls Co. Following that, the interior work will be finished in time for the installation of machinery before Jan. 1.

Rhode Island, Hope. New boilers for the Hope Co. have arrived and will be installed as soon as the boiler house which is now under construction is completed.

South Carolina, Calhoun Falls. Improvements are being made in the Calhoun Mills and a repeat order for humidifiers has been placed with the American Moistening Co., Boston, Mass.

*South Carolina, Hartsville. No plans have been decided on in relation to the proposed addition to the Hartsville Cotton Mills. It is probable that the original reports stating that 4,000 spindles will be added, is correct. C. C. Twitt is pres. and treas., and J. M. Moore is supt. Wide prints are manufactured on an equipment which at present consists of 31,000 ring spindles and 800 broad looms.

*South Carolina, Rock Hill. It has been decided to build a 2-story addition, 70 by 80 ft., to the Hamilton-Carhartt Cotton Mills, to be equipped with 50 looms for manufacturing denims. The probability of an enlargement being constructed was reported in August.

Wisconsin, Baraboo. George McArthur & Son, manufacturers of Turkish towels and crashes on 18 broad and 30 narrow looms, have purchased additional water power.

Mills Starting Up.

Georgia, Augusta. Repairs to the canal have been completed and the cotton mills will gradually be started up. It is expected that there will be a shortage of operatives, as a large number of the people left the city during the enforced idleness of the mills.

WOOLEN.

New Mills.

*Michigan, Pickford. Construction work has been started on a building for the Pickford Woolen Mills Co. The structure will be of wood, 40 by 70 feet, and 2 1/2 stories high. As stated in earlier reports, lumbermen's goods, tweeds and flannels will be manufactured.

*Michigan, Pickford. The building is under way for the Pickford Woolen Mills Co. It is a wooden structure 40 by 70 ft. and 2 1/2 stories high. Heavy woolen goods and woolen yarns will be manufactured. It is expected that the building will have been completed Jan. 1, 1909. E. S. Taylor is prominently interested.

*New Jersey, Garfield. Louis Kick has come to this country from Europe to supervise the planning and construction of the new worsted mill in which Forstmann-Huffmann & Co. of Passaic are interested.

*New York, Watervliet. In about 4 weeks the new Roy Woolen Co. will start manufacturing. 6 sets of cards and 30 looms will be operated on dress goods and carriage cloths. Charles P. Roy has been elected president and D. W. Tillinghast, treasurer. This company was incorporated in July with capital stock of $75,000 and leased one of James Roy & Co.'s factories. Extensive improvements were started in July and will be completed about the time manufacturing commences.

*New York, Watervliet. The new Roy Woolen Co. has not started manufacturing, but the changes being made in the plant are practically completed and the work of getting out samples has begun. This company was incorporated in July with capital stock of $75,000 and leased one of James Roy & Co.'s factories.

Pennsylvania, East Brady. Construction work started last week on a building which will be occupied by the Valley Yarn and Woolen Co. One set of cards and 300 mule spindles will be installed for manufacturing 7s single to 2/26s yarns. Operations will probably start in from 50 to 60 days. The capital stock of the new company is $10,000. R. W. Steele, the president, is also secretary and manager of the East Brady Woolen Co. of this place. R. F. Neal and R. R. Rhodabarger will be secretary and boss carder respectively. These men are now with the East Brady Woolen Co. but will resign and take the active management of the Valley Yarn and Woolen Co. A gas engine will be installed in the new plant to supply power.

Pennsylvania, Philadelphia. The Stratford Worsted Mills have been incorporated with capital stock of $4,000 to operate a plant in this city. Inquiry in Philadelphia failed to reveal where the plant will be located or the names of the incorporators.

Rhode Island, Pawtucket. A new concern known as the Tamarack Co. has been incorporated with capital stock of $100,000 for the purpose of weaving textile fabrics. William P. Wood, John E. Lent and John Henshaw are the incorporators. It has been rumored that the Jenckes Spinning Co. would equip a weaving department. These rumors were probably based on the formation of this new company, as Messrs. Wood and Lent of the incorporators are connected with the Jenckes Spinning Co. and are reported to have leased space in the Jenckes plant.

Rhode Island, Providence. The new Elston Worsted Mills are running night and day shifts of operatives. Surveyors have been at work within

the last few days and it is understood that construction work on the proposed new weave shed will start soon.

Enlargements and Improvements.

Maine, Fairfield. Repairs have been made to the water power equipment of the Kennebec Mills (American Woolen Co.) and manufacturing has been resumed.

Maine, Plymouth. A gasoline engine has been installed in the Plymouth Carding Mill, Robinson and Lamb, proprietors. This company operates two sets of cards on rolls and wool batting.

*Maine, Waterville. Negotiations looking toward the leasing of the Chase Mfg. Co.'s plant by Joseph Noone's Sons Co. of Peterboro, N. H., have been completed.

Massachusetts, Fitchburg. The new weave shed erected for the Shirreff's Worsted Co. has been completed and in partial use for two or three weeks. Twenty-four additional looms have been ordered and will be set up as soon as they arrive. The new building is 184 by 95 feet, and was erected by Wiley & Foss. The building is one story high with saw tooth roof.

Massachusetts, Graniteville. Extensive alterations have been made on the power equipment of the Abbott Worsted Co. Improvements have been completed and the entire plant is running on the full working schedule of 58 hours a week.

Massachusetts, Holyoke. Electric motors are being installed in the plant of the Farr Alpaca Co.

Massachusetts, Lawrence. The contractor has practically finished the building of two additional stories on Section D of the Wood Worsted Mills, bringing this section to the height of the other parts of the building. A large order for humidifiers has recently been placed with the American Moistening Co and carpenters are now at work finishing the inside ready for machinery.

*Massachusetts, Lowell. The new bridge connecting the wool department with the main mill of the Merrimack Woolen Co. is about completed. Besides the construction of this new bridge, the wool scouring department will be rearranged and part of the space utilized for dyeing purposes The preliminary work of laying cement foundations for dye vats is under way.

*Minnesota, St. Cloud. The increase in the capital stock of the St. Cloud Woolen Mill, Inc., from $10,000 to $15,000 will be used for the purpose of putting in two additional looms and a heating and lighting plant. The St. Cloud Woolen Mill has a capital stock of $15,000 and manufactures blankets, flannels and knitting yarns, giving employment to 14 hands. C. D. Burgen is president, E. F. Moore, treasurer, and Simon Taylor, formerly of Spencer, Mass., superintendent and buyer. Contracts for machinery and supplies have not been awarded.

New Hampshire, Tilton. Ground is being broken for an addition to the dye house of the woolen mill of A. D. Carter. Ladies' dress goods are manufactured on 5 sets and 40 broad looms. A. D. Carter is buyer.

New York, Fulton. It is reported that the American Woolen Co. will make extensive improvements to the power plant of the Fulton Worsted Mills. At the upper falls the dam is to be raised six feet in order to conform with the barge canal plans. Electricity is to be used for power.

Pennsylvania, Aston Mills. Improvements in the dyeing department of the May Mfg. Co. include the installation of a Klauder-Weldon skein dyeing machine, 2 new warp dyeing machines and a warp dryer; also improvements to the sulphur dyeing apparatus. An addition has been built to the original plant to provide space for the new equipment. H. P. Mallison is manager and Gus. L. Rosenberg, selling agent.

Pennsylvania, Philadelphia. Thomas Wolstenholme & Sons Co., recently reported by us as operating their plant on a night and day schedule, using 750 hands in each shift, are arranging for the erection of a new five-story addition to the present buildings at Frankford Ave. and Westmoreland St., which it is said will cost $6,000. They are manufacturers of worsted yarns.

Pennsylvania, Philadelphia. The Overbrook Carpet Company, 56th St. and Lancaster Ave., which was recently almost destroyed by fire, are having the damaged portion of the plant rebuilt at a cost of $20,000. They are manufacturers of velvet tapestry and Axminster carpets and rugs on 150 looms, and also operate a dye and finishing plant.

Rhode Island, Lafayette. A number of new boilers have been installed in the Rodman Mfg. Co.'s plant and it is stated will soon be put in use.

Rhode Island, Providence. In addition to the installation of a 100 h. p. motor the Crown Worsted Mills are adding a number of worsted spindles (Bradford system).

Rhode Island, Providence. A 100 horse-power motor supplied by the General Electric Co. has been installed in the Crown Worsted Mills.

*Rhode Island, Woonsocket. About 4,000 worsted spindles, Bradford system, will be installed in the addition being erected to the plant of the Lowland Worsted Co. Reports that the new mill will be finished by the first of November are incorrect, as no definite information can be given by the officials as to the probable time of completion. 20s to 40s worsted yarn will be manufactured on the new equipment. This company has capital stock of $100,000. Alphonse Gaulin is president and Ambrose Feeley is treasurer, superintendent and buyer. The new plant will be operated by steam power. The product is sold direct.

Pennsylvania, Philadelphia. Manuel LaMadrid, proprietor of the La Oriental Hosiery Mills located in Guadalajara, Mexico, recently paid a visit to this city for the purpose of buying machinery and supplies for his mill in which he manufactures hosiery and underwear, and also with a view of looking into the manufacture of Turkish towels, and the purchase of machinery for that class of goods.

*Rhode Island, Woonsocket. The equipment of the addition being erected for the Dunn Worsted Co. is 7 new looms. The mill is being operated four nights a week overtime. Worsted suitings and piece dyes for men's wear are the product.

Tennessee, Springfield. An unconfirmed report states that the present capacity of the plant of the Springfield Woolen Mills Co. will be doubled. It is barely possible that the plant will be increased, but as yet no definite action has been taken. All wool blankets are manufactured on 3 sets 28 broad and 4 narrow looms. H. L. Dulin is president, E. B. Long is vice-president, Harry Tatham, superintendent and W. F. Anderson, secretary and treasurer.

Mills Starting Up.

California, Marysville. The plant of the Marysville Woolen Mills, which has been closed for several months, is being prepared for the resumption of operations. It is expected that the plant will be reopened November 1.

*Maine, Sanford. The mills of the Goodall Worsted Co., which were shut down to make changes necessary in starting on the new season's business, have resumed on full time schedule.

*Massachusetts, Hinsdale. Only part of the looms of the Hinsdale Woolen Mills are running, but it is understood that the full equipment will be started up. The entire plant was shut down from June until a few days ago.

Massachusetts, Worcester. Manufacturing has been resumed in the plant of Philip Pfaffman, a new boiler has been installed and general repairs completed. Satinets, poece dyes, and unions are manufactured on two sets and thirty-two looms.

*Pennsylvania, Philadelphia. The Lawson Woolen Mills, Adams Ave. and Church St., Frankford, recently reported as having gone out of business, has again been started up, 8 new looms installed and 2 more ordered, making the equipment 10 in all, which will be doubled as soon as business brightens up. Mr. Lawson has secured the services of James Grindrod, formerly with the Mayfield Woolen Mills of Kentucky, who has charge of the plant in the capacity of superintendent and designer. They are manufacturing men's wear worsteds, using 2/32s to 2/40s worsted yarn, selling direct.

KNIT.

New Mills.

*Georgia, Augusta. The Gavin Mfg. Co. has been incorporated with capital stock of $10,000 and privilege of increasing to $25,000. J. Inman Davis and J. J. Tyler are the incorporators. This corporation will take over the plant and business of J. J. Tyler's Hosiery Mill in Augusta which was started several months ago for the manufacture of ladies' cotton seamless hosiery. The present equipment is 12 knitting machines. Additional machinery will be installed, bringing the equipment up to 20 machines and a finishing plant will be added.

*Georgia, Brunswick. Manufacturing has not begun in the new plant of the Brunswick Knitting & Mfg. Co. The company hopes to start by November 1. As reported by us in September, additional equipment will be installed for manufacturing sweaters, underwear and infants' wear. This company took over the equipment of the Selglingsville (S. C.) Hosiery Mill owned by H. J. Moody. Mr. Moody is buyer for the new company.

Massachusetts, Fall River. It is reported that a new knitting factory will be started at this place. Efforts have been made to lease about 6,000 square feet of floor space, but failing in this, it is understood that a mill will be erected. Thomas Hopkinson, who was formerly overseer of dyeing in one of the New England Cotton Yarn Co.'s mills, is interested in the project.

Missouri, Kansas City. Marshall S. Walker and Samuel A. Walker of Grand Rapids, Mich., will establish a plant in this city under the title of the Kansas City Knitting Mills.

North Carolina, Marion. Within a few weeks the new Marion Knitting Mills expect to have their machinery equipment in position. The building is practically completed. This company will also equip a plant for dyeing and finishing. Other details have been given previously.

*North Carolina, Marion. The directors of the new Mt. Ida Hosiery Mills have awarded contracts for a mill building and construction work is just being started. If the present plans are followed the building will be completed and manufacturing started by Jan. 1, 1909. Fifty knitting machines will be operated on hose and half hose. A 40 h. p. boiler and a 25 h. p. engine will be installed. This company was incorporated in August with a capital stock of $15,000. H. H. Johnson is president, R. L. Greenlee is treasurer, superintendent and buyer. Later a dye house will be erected, also a finishing department. They are interested in equipment and supplies.

*Ohio, Richwood. A building is being erected at this place and will be used as a knitting plant for the manufacture of hosiery by The A. F. McDowell Hosiery Co., a new concern which claims to have a new process for making full fashioned seamless hosiery. The building will be completed about November 1, and six knitting machines and one sewing machine will be installed as soon after that date as possible. At first, employment will be given to about six to ten hands. A. F. McDowell, superintendent, buyer and general promoter of the enterprise, expects to be in a position to increase in the spring of 1909 and give employment to 20 to 30 hands. A gasoline engine has been set up to furnish motive power and a piece dyeing plant will be equipped. They are interested in dye house equipment and supplies.

*Pennsylvania, Philadelphia. Max Sarfert, recently reported by us as putting in machinery for the manufacture of infants' all wool hosiery, which he dyes and finishes, reports that he has named the plant the Germania Cassimere Hosiery Company. The plant, which is under the superintendency of Harry K. Pulster, is very busy operating 25 knitters, 26 ribbers and 3 loopers, using

2/46 to 2/50 Australian wool and 2/15 silk. It is their intention to increase the size of the plant by putting in new knitters which they have already ordered.

Pennsylvania, Philadelphia. The Derby Knit Goods Manufacturing Co. are equipping the two-story mill building in the rear of 4958 Baynton St., Germantown, with machinery for the manufacture of sweater coats and women's ribbed underwear. The plant will contain 11 knitters and 11 sewing machines and be run by gas power. Ernest Breathwaite, who has been in the knitting business at 4964 Baynton St., will have charge of the plant as manager and superintendent, and the production will be sold direct.

Rhode Island, Pawtucket. The New Pawtucket Hosiery Co. is located in Central Falls just over the Pawtucket line. The headquarters of the company are in the building of the Hemphill Mfg. Co., on Clay St. J. D. Hemphill is treasurer.

*Virginia, Portsmouth. Jos. A. Parker, proprietor of the Parker Hosiery Mill and Dye Works, expects to have his new mill completed by the middle of December. As previously reported, building contracts have been awarded to Edward Overman of Portsmouth and work has been started. The equipment will include 300 knitting machines for manufacturing children's and misses' ribbed hose, giving a daily capacity of 900 to 1,000 dozen pairs.

Enlargements and Improvements.

*Connecticut, Windsor Locks. Work has already begun on the new addition reported last week as planned by the Medlicott Co. They do not expect to add new machinery. The second floor will be equipped with machines from the old knitting room, which has been very much crowded heretofore, while the first floor will be used for wool sorting and for storage

*Massachusetts, Ipswich. The new building being erected for the Ipswich Mills has risen to the second story. Below the dam an addition 100 feet square is being built to the dye house. A large number of workmen are being employed and the work is being pushed along rapidly.

*Michigan, Muskegon. The building of a new warehouse for the Amazon Knitting Co. is the only improvement contemplated at this time.

*New York, Mohawk. It is expected that the Mohawk Valley Knitting Co.'s plant will be started some time during the winter by the Duofold Health Underwear Co. of Frankfort. It is understood that the mill will be put in shape for starting up at once. Some reports state that the Duofold plant will be moved to this place.

*New York, Oswego. Construction work is started on the new building five stories high for the Ontario Knitting Co. The new building will be equipped with the present machinery of this company as they are compelled to move owing to plans for the new barge canal.

*North Carolina, Lexington. Plans are being made by the Yadkin Knitting Mills for rebuilding their plant which was burned in March with a loss of $21,000. The company has capital stock of $15,000 and operated 41 latch needle machines on women's seamless cotton hosiery.

*North Carolina, Vaughan. Further particulars of the starting up of the Vaughan Hosiery Mills are as follows. J. T. Myrick and C. B. Vaughan have bought the controlling interest in the company and will install machinery equipment as outlined in previous report. Hose and half-hose will be the product. The capital stock is $10,000, all paid in. Officers have not been elected up to the present time, but a meeting will be held shortly for this purpose. The mill is equipped with steam power plant and dye house. When running full, employment will be given to 25 hands.

*Pennsylvania, Birdsboro. Ten new Paxton and O'Neill machines have been added to the plant of W. B. Beyer & Sons. Outside of this new equipment there will be no additional machinery as the plant is being enlarged merely to give proper facilities for handling the output. Heretofore they have been very much crowded for space.

Pennsylvania, Philadelphia. Messrs. Lazowick Bros., who have been operating the Keystone Embroidery Works at 515-17 Lombard St., operating 12 knitting, 25 Bonnaz and 20 trimming machines on hosiery, and also a printing and finishing plant. report that they recently acquired possession of a knitting plant in North Carolina which they will operate in conjunction with their present business in this city under the name of the Atlantic Hosiery Mills. The production in the future will be fine seamless cotton hosiery, which they will sell direct and through New York.

Pennsylvania, Philadelphia. Rowland Hunt. Collins and Westmoreland Sts., manufacturer of women's fine gauge full-fashioned hosiery, is quite busy, having recently increased his equipment. He is now operating 13 full fashioned machines, 5 seamers and 6 loopers. The production is sold through E. W. Parks, N. Y.

Pennsylvania, Philadelphia. S. Grushlaw & Co. are arranging to remove their Pennsylvania Knitting Mills from 314 Market St. to the Wakefield Building, on Race St., above 10th, where they have leased an entire floor and will increase their machinery by adding new winders, knitting and other machinery for the manufacture of jackets, mufflers, sweaters and fancy knit goods. They expect to be in their new location by January and hope to double the size of the plant.

Pennsylvania, Philadelphia. Miller & Sons Co., 53d and Westminster Ave., who have been operating 90 spring needle knitters and 12 sewing machines on women's plain and fancy hosiery, have recently added 40 latch needle knitters and 18 loopers and are now manufacturing a line of men's and women's fine lisle and mercerized hosiery, which they dye and finish and sell direct. The company has a capital of $75,000 and Jos. B. Miller, pres.; John W. Miller, treas.; Edward C Miller, sec., and Chas. R. Miller, supt. and buyer. They are very busy.

Pennsylvania, Philadelphia. The Standard Hosiery Co., 1310 to 1326 Lawrence St., has given to the Penn Mutual Life Insurance Co. a mortgage

for $47,500, to cover the cost of the new buildings recently erected by them as an addition to their present plant, which is now one of the largest and best equipped knitting mills in this vicinity, being fitted up for the manufacture of hosiery from the raw stock to the finished goods.

Pennsylvania, Philadelphia. Cohen & Marku, now at 1427 Catharine St., where they are manufacturing boys' caps, toques and stockings on 10 knitters which they finish and sell direct through their New York office, are arranging for the removal of their plant from this city to New Brunswick, N. J., in which town they have secured new quarters.

Pennsylvania, Philadelphia. The Beattie Hosiery Co., who are now conducting their business in a two-story building formerly operated as a saw mill and which they have equipped with a boiler and engine and refitted for knitting purposes, report that they are very busy on stocking feet and women's seamless cotton hosiery. The plant, which now contains 30 knitters and 3 loopers, will be augmented by an addition of 10 new machines and others added, from time to time, until the building is filled. The plant is located at 4328-30 Trenton Ave., Frankford, from which they sell their production direct.

*Rhode Island, Pawtucket. The new building of the Lumb Knitting Co. is about completed and will be in operation it is expected by November 1. The dimensions are 194 by 98 ft., one story with basement.

Rhode Island, Woonsocket. In order to better make repairs the Leicester Knitting Mills have shut down for two weeks.

South Carolina, Spartanburg. It is reported that the Crescent Mfg. Co. will change over from steam to electricity for motive power and add a number of knitting machines. 78 latch needle knitting machines and 66 ribbers are operated on men's and women's seamless and children's and infants' hosiery. Hugh F. Little is superintendent and buyer. The Crescent Mfg. Co. has capital stock of $50,000.

*Wisconsin, Two Rivers. Particulars of the enlargement of the Zulu Knitting Co. which have been widely circulated are incorrect. The facts are that a contract has been awarded for an addition which will cost in the neighborhood of $7,000. This space will not be equipped with carding, winding and dyeing machinery as reported, but will be used to increase the product along the lines now manufactured. The Company already has an up-to-date dye plant. The Zulu Knitting Co. manufactures half hose, women's hosiery, sweaters and fancy knit goods in wool and worsted on 35 latch needle and 15 flat knitting machines. W. S. Bremer, Jr., is buyer.

Mills Starting Up.

Connecticut, Manchester Green. The Glastonbury Knitting Co. has resumed operations after a shut down lasting six weeks. As previously reported, the plant has been enlarged during the suspension of manufacturing.

North Carolina, Vaughan. The Vaughan Hosiery Mills property has just been bought in by J. T. Myrick and Mr. Vaughan. They are going to take out the old machinery equipment installed by the former concern which was never really able to start the mill and a number of G. D. Mayo machines have been ordered. 176 latch needle hosiery will be manufactured. The ribbers on hand, practically the only machines that will be used, will be changed over for this gauge. The looping machines will be the latest improved German Koehler make. This plant has not been operated for some time and has been offered for sale.

Pennsylvania, Pottsville. The Reber Knitting Mill has started up and it is stated has orders sufficient to keep it running for seven months.

Pennsylvania, Slatington. The Slatington Knitting Co. Ltd., which has curtailed production for several months, has gone on full time, and the Crystal Knitting Mills, which have worked full time throughout the business depression, have gone on an overtime schedule.

SILK.

New Mills.

New Jersey, Paterson. The Guarantee Silk Lining Mills have been incorporated with capital stock of $25,000, divided into 250 shares, par value $100. The new company will manufacture dress and lining silks on 30 looms from Japanese and Chinese raw silks. Frederick Ernest Schmidt is treasurer, superintendent and buyer and Ernest Arthur Schmidt is president. Manufacturing will begin within a few weeks.

*New Jersey, Paterson. Good progress is being made on the new silk plant to be started by B. Edmund David, formerly of the firm of Reiling, David & Schoen. As announced in earlier reports the equipment will consist of 350 looms for the manufacture of fancy tie silks and novelties. Mr. David has a selling office at 47-49 Greene St., New York City.

*New Jersey, Paterson. Good progress is being made on the work of installing 100 looms in the Barbour Mill for Stehli & Co.

*New York, Binghamton. The new Ballard Silk Co. will be incorporated with a capital stock of $10,000. This company recently started up with six looms on 36-inch taffetas and is doing a mail order business, selling product direct. They expect to largely increase the plant in the near future.

*Pennsylvania, Scranton. The W. A. Lush Silk Co. previously reported to be erecting a plant to be equipped with 8,000 spindles for silk throwing, has been granted a charter with capital stock of $50,000. The directors are W. A. Lush, Wm. Marsden and David R. John all of this place. The plant is located on Clearfield St. and North Lincoln Ave. and is being erected at a cost of $30,000. The main building is 126 by 45 ft. and is practically completed.

Enlargements and Improvements.

*Connecticut, Norwalk. The new brick building to be erected for the Muller Gloria Mills are to be

used for storage purposes only. This concern manufactures silk umbrella cloths.

Connecticut, Putnam. A new boiler house, 48 by 25 feet, is being erected for Hammond, Knowlton & Co. A 150 h. p. boiler will be installed. Hammond, Knowlton & Co. manufacture sewing silks, silk braids, etc. W. E. Holmes is superintendent and G. A. Hammond is buyer.

*Michigan, Belding. In the near future, the Richardson Silk Co. will add the manufacture of woven fabrics to their present line. They have not fully determined as yet just where this department will be located, but it is not certain that the old Belding-Hall Co.'s buildings will be used as the Richardson Co. states that they will not go outside of the present plant until forced to do so for lack of space. F. A. Washburn is superintendent and buyer. The Richardson Silk Co. manufactures silk and mohair braids, sewing, embroidery and fancy silk, silk machine twist, etc., operating 5,000 spindles and 120 braiders. The company is capitalized at $400,000.

*New York, Boonville. No particulars have been given out relating to the proposed enlargement of the silk throwing plant of Ludwig Littauer at this place.

Pennsylvania, Dunmore. Construction will be started shortly on a new building, 40 by 100 ft., and two stories high, for the Dunmore Silk Throwing Co. This company operates 3,250 spindles. H. J. O'Donnell is president and superintendent and E. B. Frisbie is secretary and treasurer.

MISCELLANEOUS.

*Connecticut, Middletown. In the contract made with the building contractor it was agreed that the new mill to be erected for the Russell Mfg. Co. would be finished before March 1, 1909. The machinery equipment will consist of 100 new looms for weaving elastic narrow fabrics. 100 additional hands will be given employment. The building will be 110 by 50 feet and it is understood that all the space will be occupied immediately on completion. The Russell Mfg. Co. has a capital stock of $900,000. E. K. Hubbard is president; W. C. Fisher, treasurer; E. L. Bailey, agent, and F. H. Frissell, superintendent. The capacity of the present power department is large enough to operate the additional equipment, but several electric motors will be installed to facilitate the distribution of the power.

*Connecticut, New Haven. Notice of an increase in the capital stock from $75,000 to $100,000 has been filed by the Narrow Fabric Corporation. This increase will be applied to improvements now under way, consisting of a 3-story brick building, 200 by 68 ft. All departments of the company are to be increased.

Connecticut, Jewett City. A new water wheel has been put in for the Aspinook Co. The new wheel is of 470 h. p. and replaced one of 420 h. p.

Illinois, Zion City. Plans are being made by Marshall Field & Co. to enlarge the Zion City lace industries and it is reported that $50,000 will be expended. In September, 1907, Marshall Field & Co. took over the lace plant and has found the business a good investment. In April of this year a quantity of new machinery was installed.

*Massachusetts, Amherst. Repairs have been finished on the Kelloggville factory, and the Brown Mercerizing Co. has started to move its machinery from Holyoke. The company will get electricity for lighting and power purposes from the Connecticut Valley Power Co. Brown Mercerizing Co. is capitalized at $50,000 and has taken over the business and equipment of the J. E. Brown Cotton Works of Holyoke.

*Massachusetts, Brockton. Preparations have been completed for starting machinery in the new plant of Hutton & Lapworth. The equipment is 8 looms for manufacturing elastic web goods, suspender webs and garter webbing. This company was formed in May. Mr. Lapworth is a son of William Lapworth, manufacturer of webbing at Milford, Mass.

*Massachusetts, Brockton. Plans for the new webbing mill to be operated by Arthur W. Smith & Co. are not sufficiently matured to make a definite statement. Both jacquard and plain webbing will be manufactured on eight looms. Mr. Smith was formerly president of the Brockton Webbing Co.

Massachusetts, Chelsea. A new mill, 3 stories high, 60 by 100 ft., is being erected for T. Martin & Bro. Mfg. Co. On the completion of the building, 40 to 50 looms for weaving elastic webbing will be installed. It is planned to have this department running about the first of January. The new building is of brick and concrete construction and planned especially for this class of work. T. Martin & Bro. Mfg. Co. has capital stock of $1,000,000 and manufactures elastic webbing, braids, cords, etc., on 350 looms.

*Massachusetts, Millbury. The new building to be erected by E. W. Pitman Co., contractors, of Lawrence, for the West End Thread Co., is merely to take the place of an old wooden building which has been used for drying. We are advised that no new machinery equipment will be installed. F. W. Hooper is resident manager and buyer. Linen shoe threads are the product.

*Massachusetts, Millbury. The new company which has secured the property of the old United States Linen Company has been incorporated as the National Crash Mfg. Co., instead of under the name of the United States Milling Co., as originally planned. The capital stock is $50,000. Extensive repairs have been made in the plant and a large stock of flax secured. Manufacturing will begin on a small scale on Monday, Oct. 12, but they plan to gradually increase the production until the entire equipment is in operation. S. L. Gabriel, treasurer of the old U. S. Linen Co., is general manager, and S. E. Benjamin, superintendent under the old management, has been retained as superintendent. C. L. F. Coburn is president and Stanley W. C. Downey, of Eaton & McKnight, attorneys, 45 Milk St., Boston, is treasurer.

*Massachusetts, New Bedford. John C. Anderson, previously reported as about to establish a plant for the manufacture of narrow tapes from mercerized yarns, has leased the Fowler Building and it is reported has purchased machinery. Mr. Anderson was formerly identified with the New England Cotton Yarn Co. in their Taunton mills.

*Massachusetts, Wales. The Textile Specialty Co., which will take over the old Berkeley Woolen Mill, as reported, has been granted a charter, with capital stock of $150,000. P. Kenyon of New York City will be president, and J. B. Perkins of Boston, treasurer. Herbert E. Shaw, formerly proprietor of the Berkeley Woolen Mill Co., will be general manager and buyer.

New Hampshire, Milford. Slight changes are being made in the plant of the Middlesex Linen Co., the hydraulic press being raised from the lower floor to the top floor. This press is a part of the finishing room equipment.

New Jersey, Beverly. It is reported that the Standard Combed Thread Co., now at 2d and Erie Sts., Camden, have taken over the buildings formerly used by the Birkhead knitting mills and will remove their machinery to this town. They are manufacturers and carbonizers of wool stock and wool packing threads, their present plant containing 8 combs, 7 cards, 4 garnetts, 7 shoddy pickers and 4 carbonizers. The company has a capital of $50,000, Thomas Lee, pres., and W. B. Caminade, sec. and treas.

*New Jersey, Montville. The Catterall Printing Co., recently incorporated, will occupy the old Thistle Mill building of this place and will start operations between Dec. 1, 1908, and Jan. 1, 1909, giving employment to 30 hands. As previously reported, they will do calico printing, finishing flag cloth, bunting and other decorative fabrics. Cloth from 23 to 44 inches in width will be handled. The Catterall Printing Co. has a capital stock of $50,000. Hon. Thomas J. Hillery of New Jersey is president, Fred C. Whitehead is treasurer, and Adam Catterall, agent and buyer. Matthias C. Lokker is superintendent. Davis & Catterall, New York, will be the selling agents. Both steam and water power will be used.

*New Jersey, New Brunswick. In the new mill erected for Johnson & Johnson, manufacturers of absorbent cotton and surgical supplies, the American Moistening Co.'s system of humidifiers will be installed.

*New Jersey, Paterson. Contract for erecting buildings for the new Wagaraw Bleachery has been awarded to the David Henry Building Co. Construction work will begin at once. The contract price for the buildings is $65,000. Particulars of this company have been given previously.

New Jersey, Paterson. On October 1 construction work started on the erection of a large dye plant, one story high, 400 by 150 ft., for the Weidmann Silk Dyeing Co. of this city. A machine shop and boiler house will also be erected. These improvements will cost in the neighborhood of $100,000. This company does skein silk dyeing and at present has a capacity of 12,000 lbs. daily. Their mail address is P. O. Box 1826.

*New York, College Point. The addition being erected to the main plant of the College Point Silk Dyeing Co. will be 40 by 80 ft. New machinery will be installed. R. A. Webber is proprietor.

New York, Lestershire. An addition to the power plant of the Faatz Reynolds Felting Co. will be erected shortly.

New York, Lockport. A new concern known as the Lockport Textile Co. has started up 36 looms on linen and union goods, using both electricity and steam for motive power. John Aldred is president and superintendent and Jos. Aldred is treasurer and buyer. The product is bleached and finished at the plant and sold direct. Jos. Aldred was formerly superintendent of the Niagara Textile Co. of this place, manufacturers of huck towels and crashes.

North Carolina, Burlington. The Burlington Dye Works has been organized and will establish a plant for dyeing and finishing hosiery. D. E. Sellers, president and treasurer of the Sellers Hosiery Mill, is secretary and treasurer of the new company.

*Pennsylvania, Chester. Particulars of the new concern which it was reported would start a plant for the manufacture of hospital and pharmaceutical cotton supplies at this place are as follows: George W. Turner, formerly superintendent of the Argo Mills, Camden, N. J., his son, George C. Turner, at one time superintendent of the Lincoln Cotton Mill and the Trainor Spinning Mills of Chester, Pa., in conjunction with other parties, are forming a new company for the purpose of starting up a plant for manufacturing antiseptic cottons, gauzes and hospital supplies. A charter has been applied for under the laws of the state of Delaware and the capital stock placed at $300,000. The company has taken over the old Patterson Mills which are being remodeled. They will have equipment of 35 cards, 5,000 spindles and 300 looms, in addition to other machinery, including a complete bleaching and finishing department. The plant will be equipped with steam and electric power equipment. George W. Turner will be in charge.

Pennsylvania, Philadelphia. The Wayne Dyeing & Finishing Co., who have been operating a plant on Bristol St., above Germantown Ave., for the finishing of hosiery, have shut down the plant, disposed of their equipment and are now out of business.

Pennsylvania, Philadelphia. The Johnson, Taylor Co. have leased temporary quarters in the Dale Mill on Gillingham St., Frankford, in which they are installing looms for the manufacture of hair cloth. This is a verification of the report recently made by us regarding parties in Eddington and this city starting a plant of this kind.

*Rhode Island, Canonchet. The full equipment of the Canonchet Line & Twine Co., including new spindles installed in the addition recently built, is in operation. Cotton seine twine is manufactured, the product being sold direct. The company operates a dye-house and uses both steam and water power.

*Rhode Island, Greenville. The Hygienic Fabric Co., reported incorporated in September with

capital stock of $50,000 should have read "Hygienic Fibre Co." The corporation takes over the business of the Hygienic Fabric Co., a copartnership. A new bleach house is being erected and other improvements completed and a small quantity of new machinery will be added, including knitting machines and labeling machines. E. A. Smith is president, H. C. Babcock is treasurer and buyer, and W. F. Goodfellow is superintendent. Absorbent cotton and similar goods are manufactured. Both steam and water power are used.

*Rhode Island, Pawtucket. Additional looms are being installed in the Smith Webbing Co., as reported previously. The company contemplates adding to the power plant in the near future, but has not decided upon the plans or the time for making the improvements. Narrow elastic and non-elastic fabrics are manufactured.

Rhode Island, Providence. A permit has been issued to the United States Finishing Co. for the erection of a 2-story addition to its plant on Charles St. in this city.

Rhode Island, Providence. As the first step toward increasing the plant and business of the Fales Textile Co., a corporation under the same title has been formed with capital stock of $15,000 to take over the business. David Bromley, George L. and Russell Fales are the incorporators. This company converts cotton threads and does commercial winding. The nature of the increase has not been made public. Geo. L. Fales is buyer.

*West Virginia, Martinsburg. The Oriental Rug Co., reported as erecting a plant for the manufacture of rugs from old carpets and cotton ends, expects to begin manufacturing November 30. 7 looms will be installed and operated by electric power. This company has capital stock of $50,000. Edward L. Williams is pres. and treas.

FAILURES AND SUSPENSIONS.

Pennsylvania, Hamburg. W. Scott Fisher, trading as the Keystone Knitting and Bleach Works, has been adjudged an involuntary bankrupt. Samuel E. Bertolet has been appointed referee.

Pennsylvania, Philadelphia. David H. McKinley, individually and late trading as the Philadelphia Thread Co., formerly located at Hancock and Oxford Sts., has been adjudged an involuntary bankrupt. The liabilities are $141,171.26 and assets, $13,130. Alfred Driver has been appointed referee. A notice has also been forwarded to the creditors stating that the first meeting of creditors will be held at 505 Chestnut St., on the 5th day of November, at which they may attend and prove their claims and appoint a trustee.

FIRES.

*Massachusetts, Fall River. A serious fire occurred in the picker department of the absorbent cotton plant of the Estes Mills. It is impossible to definitely assign the cause, but it is believed that a spark was wound up in a lap of cotton and smouldered until it reached the surface of the lap, then flashed into a flame. The loss has been adjusted with the insurance companies on the basis of $10,495.05. They are repairing the damage, but the upper story, which was completely destroyed, will not be rebuilt this fall. In the lower story were 7 pickers and a fiber machine. They are putting a temporary roof over this room for the winter. Definite plans for repairs will not be decided upon until spring.

New Jersey, Hawthorne. Fire damaged the plant of the American Silk Dyeing & Finishing Co., causing a loss of nearly $5,000. Some reports of this fire greatly exaggerated the loss, placing it from $10,000 up. The plant is in no way crippled and will get out orders on time. Repairs will be made at once.

FACTS AND GOSSIP.

Canada, Montreal. The Canadian Felt Co. has been incorporated with capital stock of $1,000,000. The object given is to manufacture felts and knit goods. E. F. Surveyor, A. C. Casgrain and J. W. Weldon are the incorporators.

Canada, Ontario, Toronto. A charter has been granted to the Canadian Flax Mills, Ltd., a corporation with head office in Toronto. The capital stock is placed at $1,000,000. D. F. Keith, A. P. Campbell, E. F. White, W. E. Hunter and E. B. Ross are the directors.

*Connecticut, Millbury. Manufacturing has not started in the National Crash Mfg. Co.'s plant, formerly the U. S. Linen Co. S. E. Benjamin, superintendent, has a force of men at work making repairs preparatory to starting up the plant.

Connecticut, Rockville. As a result of the improved conditions in the woolen industry, local mills are again running on full time and report good outlook.

*Connecticut, Vernon. The Ravine Mills Co. plant is now in the name of the First National Bank of Hartford and is for sale.

*Delaware, Wilmington. The Empire Silk Co., recently granted a charter with capital stock of $1,600,000, refers to the Empire Silk Co., operating plants at Paterson, N. J., Carbondale and Wilkesbarre, Pa.

Georgia, Augusta. Report to the effect that the Riverside Mills have been damaged by fire is incorrect. The facts are that a lot of cotton waste spread out to dry after the high water caught fire and was a total loss.

*Georgia, Fitzgerald. The Fitzgerald Cotton Mills advise that there is no proposed change which will embrace equipping weaving department. Reports to that effect are incorrect.

*Georgia, Gainesville. The Georgia Power Co. has been formed with capital stock of $500,000 to develop water power properties, build electric plants and promote cotton mill building. J. J. Spaulding, H. G. Pryor and James A. Rudolph are the incorporators.

Georgia, Rossville. A night force is employed in the Park Woolen Mills in order to double the output of the plant. Jeans and cassimeres are manufactured on 200 looms. This plant is controlled by the American Textile Woolen Co. with headquarters at Chattanooga, Tenn.

Illinois, Aurora. The entire plant of the Aurora Cotton Mills is being equipped with humidifiers. Contracts have been awarded to the American Moistening Co., Boston, Mass.

Illinois, Chicago. Armour & Co. will rebuild their wool house destroyed several weeks ago by fire. R. C. Clark, the architect of the company, is engaged in preparing plans. The new building will be of steel construction, five stories high and will cost about $500,000.

Illinois, Highland. Articles of incorporation have been filed by the Highland Embroidery Works. The capital stock was placed at $15,000. J. J. Spindler, L. J. Ruhr and B. Spindler are the incorporators. It is understood that this corporation takes over the business of the Highland Embroidery Works, a concern operating a plant on fine embroidered flannels, cotton and silk embroideries, etc., at this place.

*Illinois, Ipava. T. H. Greer of Canton, Ill., who purchased the Ipava Woolen Mills property, has not decided on the future of the mill. The plant will be leased if suitable parties can be found; otherwise, it is probable that Mr. Greer and associates will operate the plant themselves.

Indiana, New Albany. It is again rumored that the New Albany Woolen Mills Co.'s plant is to be taken over and operated. The present report states that Ohio capitalists who are interested in woolen and cotton mills and have a backing of $1,000,000 are negotiating for the property.

*Kentucky, Louisville. The clothing factory of the Mayfield Woolen Mills Clothing Co. is running, but the woolen mill has not been started up. On the company's petition, a receiver was appointed last February and discharged on April 30. The company is at present laboring under an extension of 12 months which was agreed to by all the creditors. Settlement of the indebtedness was made by notes for 3, 6, 9 and 12 months from March 1 of this year. Both payments which matured have been paid promptly and the outlook is bright for an early resumption of normal conditions.

*Kentucky, Louisville. It is reported that John Williams is making good progress in the formation of a company to occupy and operate a plant for manufacturing worsted yarns. Mr. William's address is Innes Court, Barret Ave., Louisville.

Louisiana, Baton Rouge. It is reported that the Alden Mills of New Orleans are looking for a site on which to locate a mill in this city.

Maine, Penobscot. The mitten factory of A. C. Condon & Co. is running full capacity, giving employment to about 125 hands. Knitted mittens are the only product. The production is taken by O. A. Bailey & Co., Boston.

Maryland, Baltimore. The Maryland Bag & Burlap Co. has been incorporated with capital stock of $10,000 by Harry M. Gaskin, Dr. Harry Naylor and Garnett Y. Clark. Dr. Naylor will be president and Mr. Gaskin treasurer and general manager. It is understood that a plant will be started for the manufacture of burlap bags.

*Massachusetts, Clinton. No information has been given out by the Earnsdale Worsted Mills as to whether the increase in capital stock from $35,000 to $65,000 will be used to enlarge the business.

*Massachusetts, Farnumsville. Albert H. Chamberlain and Frank B. Smith, assignees and trustees for the benefit of creditors of the Excelsior Mills, have submitted a statement of their work since they took charge of the property. It showed the deficiency on April 21 was $104,247 and on September 1, $71,000. The question as to whether the mills will be kept running has been submitted to the creditors for decision. The future disposition of the mill is somewhat uncertain. It is probable that a new organization will be formed.

Massachusetts, Holyoke. On account of lack of water the head-gates at the dam have been closed and will not be opened for the balance of this week. This requires a complete shutdown of the mills depending on water for manufacturing purposes. The present drought is one of the most serious ever experienced by local manufacturers.

Massachusetts, Lawrence. The stockholders of the Eastern Webbing Co. have voted to increase the capital stock from $10,000 to $20,000. John C. Marshall is president and treasurer.

Massachusetts, Lowell. The weavers employed in the Bigelow Carpet Company's plant who have been out on strike for the past eleven months have voted the strike off. Nearly all of the vacancies in the mill have been filled.

*Massachusetts, Lowell. Nothing has been decided upon in the matter of plans for the proposed new dye house for the Bigelow Carpet Co. It is not probable that a new dye house will be erected for some time. Reports purporting to give dimensions, etc., are unreliable.

Massachusetts, New Bedford. Two buildings owned by the Bristol Mfg. Co. will be removed and the land graded. Reports that a new mill will be erected at this time are incorrect, as we are advised that no addition is contemplated at the present.

Massachusetts, New Bedford. The purchase by the City Mfg. Corporation of a tract of land adjoining their present property gave rise to the rumor that a new building would be erected. This report is denied by officials of the corporation, who state that there is no such plan on foot at present.

*Massachusetts, North Adams. Creditors representing all but about $50,000 of the claims against the Arnold Print Works have agreed to the plan of reorganization proposed by the committee. It is stated that proceedings looking toward carrying out the reorganization will be started within a few days. It will probably take two months' time to complete it, so that the new company will not begin operations until about Jan. 1, 1909.

Massachusetts, North Brookfield. A rumor has been current that the Oxford Linen Mills were to move their machinery to East Brookfield. The company says that the report is without foundation in fact.

Massachusetts, North Dighton. Business is very good at the Chadwick Print Works, the plant being run evenings to get out orders on time.

Massachusetts, Pittsfield. It is reported that Ralph D. Gillett, treasurer of J. L. and T. D. Peck Mfg. Co., will purchase the interest in the company of Thomas D. Peck, president. The plans include the retiring of Mr. Peck from the manufacturing business and the assuming of entire charge of the Peck Company's affairs by Mr. Gillett. The upper mill is shut down for the present week to make necessary repairs.

Massachusetts, Taunton. The Taunton River Mills are running full production, giving employment to the full complement of help. Owing to the rush for goods shipments are being made by express. Silk and silk and cotton dress goods are manufactured on 450 looms.

Massachusetts, Watertown. The hours of work at the Bemis Mills have been reduced to 48 hours a week basis for an indefinite period. The shortage of orders in their lines of serges and dress goods is the cause of the decrease in the output.

Massachusetts, Worcester. The carpet mill of M. J. Whittall has resumed full time. The mills have been working 40 hours a week for a number of weeks.

Michigan, Muskegon. Mayor Lawson has started a movement to secure a large bonus fund for the purpose of securing new factories. The Chamber of Commerce will cooperate in this movement.

*Michigan, Saginaw. It is probable that the waterproofing plant which it was reported Detroit parties would start in this city will not come here. The Industries Committee of the Board of Trade is in communication with knit goods manufacturers and anticipates starting a knitting plant within a short time.

New Hampshire, Claremont. The Monadnock Mills are at present running nearer full capacity than at any time since last fall, and the outlook is for gradually increasing business.

*New Hampshire, Laconia. Reports that the plant of G. H. Tilton & Son would shut down for two weeks are incorrect. Instead of shutting down they are running extra time and the only repairs made on the plant this year were recovering the roof. Cotton hosiery and cotton yarns are manufactured.

New Hampshire, Rochester. There is good prospect of an increase in the business of the Rochester Woolen Co. and preparation is being made to start additional machinery.

New Jersey, Camden. The American Wool Degreasing Co. has been granted a charter with capital stock of $700,000. Walter Erbin, Charles H. Harding, Frank Sherman, Norman Grey, Arthur S. Harding, George K. Erbin and Constantine Shuman are the incorporators. The object as given is to operate and deal in machinery for degreasing wool.

New Jersey, Florence. The rumor in reference to the Florence Thread Co. going on short time is incorrect. W. C. Sturtevant, superintendent, states there is absolutely no foundation for such a report. This plant has been running full time during the recent depression in business.

New York, New York City. Following plans outlined in the Advance News in September, the stockholders of the American Grass Twine Co. have voted to name the concern the Crex Carpet Co. and reduce the capital stock from $15,000,000 to $3,000,000. A dividend of 2 per cent. has been declared which is said to be the first since January, 1903. The smaller capital rendered future dividends practicable.

New York, New York City. A corporation to be known as the Frederic H. Nadler Co. has been granted a charter with capital stock of $10,000. Frederic H. Nadler, 72 Allen St., this city, is at the head of the company. It is stated that quilts, blankets and comfortables will be manufactured.

New York, New York City. The Oxford Sponging & Refinishing Works have been incorporated with capital stock of $6,000. James Nutley, Mt. Vernon and John Nutley, 43 West 32d St., are the incorporators. It is reported that a plant will be started.

New York, New York City. At the annual meeting of the United States Finishing Co., which operates plants at Norwich, Conn.; Passaic, N. J.; Sterling, Conn. and Pawtucket and Providence, R. I., it was voted to increase the capital stock of the company from $3,600,000 to $5,000,000. The increase will not be used for enlarging the plants.

New York, North Tonawanda. It is reported that James Sweeney, Jr., of this place has negotiated with a cotton manufacturer relative to building a large cotton mill here. Many desirable sites are available and the freight and labor situations are favorable to an industry of this nature.

New York, Utica. All departments of the Skenandoa Cotton Co. have begun running on the full schedule of 60 hours a week. Seven hundred hands are employed. The whole manufacturing outlook in this city is encouraging and the period of business depression is believed to have passed

*North Carolina, Concord. It has been decided to sell the property of the Odell Mfg. Co. at auction on Wednesday, Nov. 25. A serious fire prevented the selling of the property in September as scheduled. It will be remembered that this is part of the program for reorganization. The mill is being operated full time.

North Carolina, Gastonia. After running on a schedule of half time for several months, the Modena Cotton Mills have begun operating on full time. Sheetings and 24s to 36s yarns are manufactured on 17,860 ring spindles and 216 looms.

North Carolina, Hargrove. The Tar Valley Mfg. Co. has been incorporated with capital stock

of $75,000. W. D. Kimball, W. R. Kimball and Arthur J. Honeycutt are the incorporators. It is understood that a mill for the manufacture of cotton goods will be built. Messrs. W. D. and W. R. Kimball are proprietors of a saw mill at this place.

North Carolina, Morganton. The Alpine Cotton Mills have just returned to full time operation. Yarns are manufactured on 11,000 ring spindles.

North Dakota, Minot. It is reported that Claude Neilson of Fosstown, Minn., is trying to interest the business men of this place in a woolen mill proposition.

Ohio, Zanesville. The Zanesville Woolen Mfg. Co.'s plant has been shut down for 8 months and there is no prospect of the immediate resumption of manufacturing. Face goods and carriage linings were manufactured on 4 sets and 28 looms.

Oklahoma, El Reno. The directors of the newly incorporated Canadian Cotton Mill Co. have decided not to attempt to carry out their plans for the construction of a cotton mill at this time. This company also deals in cotton. F. E. Gillette is at the head of the corporation.

Oregon, Pendleton. The Commercial Association of this city is making an effort to retain the woolen mill of J. Sheuerman & Sons. The mills were closed down some months ago. Pendleton business men may take stock in the concern and start the mills again.

Pennsylvania, Columbia. The Ashley & Bailey Co. report that in order to catch up with their orders it will be necessary for the warping department to run at night to keep their looms running. They are manufacturers of thrown silk, dress and tie silks, and handkerchiefs, operating 20,000 spindles and 450 looms with plants in Paterson, N. J., Fayetteville, N. C., and Marietta and Coatesville, Pa.

Pennsylvania, Conshohocken. It is reported that the J. J. Ellwood Lee Co., manufacturers of hospital goods, has acquired the business of the N. J. Rubber Specialty Co., whose plant is located at Milltown, N. J., and have in contemplation its removal to Conshohocken in the near future.

Pennsylvania, Philadelphia. The Peerless Company, 1845 E. Willard St., skein silk dyers and bleachers of woolen hosiery, are quite busy. They report that they are making a specialty of dyeing fast colors on silk for manufacturers of worsted goods, which is bringing them in many orders.

Pennsylvania, Philadelphia. Thomas Wolstenholme Sons & Co., Frankford Ave. and Westmoreland St., who have been running their plant to its full capacity for the past three or four months, employing 750 hands, are now, it is said, making ready to start the plant on a night schedule, employing the same number of hands as used for day work. They are manufacturers of Bradford and French spun worsted and merino yarns, operating 35,000 worsted spindles, 30 worsted cards, 30 combs, and a dye house.

Pennsylvania, Philadelphia. The Hensel Silk Manufacturing Co., 1015 Diamond St., manufacturers of upholstery and drapery trimmings on 35 looms, are so busy that they are running their plant until 9 o'clock at night in an effort to fill orders.

Pennsylvania, Philadelphia. At the first meeting of the creditors of the Tioga Dye Works, whose plant was sold out at public auction some time ago, Otto Wigaart was elected trustee under $2,500 security.

Pennsylvania, Philadelphia. Messrs. Royle & Campbell, formerly located in the Dale Mill on Gillingham St., Frankford, have dissolved partnership, the business being now conducted by Mr. Royle under the firm name of George Royle & Co., with quarters in the O'Neill Mills at Oxford and Josephine Sts., where they are manufacturing tapestry goods, couch covers, etc., on 10 looms and selling the production direct. They report a good and improving business.

Pennsylvania, Scranton. As a result of difficulties between the operatives in two departments of James Simpson & Co.'s plant, the weavers are out on strike.

*Pennsylvania, Sellersville. The Armure Tapestry Mills, recently sold to other parties at receiver's sale, is again to be sold at public auction. The parties to whom the plant was sold have given up the idea of operating it on account of the death of one of the parties interested.

Pennsylvania, West Conshohocken. The employes of the Merion Worsted Mills are now working full time for the first time since November, 1907. French spun worsted yarns are manufactured on 12 worsted cards, 8 combs and 15,000 spindles. The company has capital stock of $250,000

Rhode Island, Apponaug. Beginning this week, the Apponaug Co. will start a part of the works on overtime. They finish cotton and silk piece goods up to 42 inches, operating 10 printing machines, with a capacity of 150,000 yards per day.

*Rhode Island, Pawtucket. At the present time no information relating to the new Tamarack Co. will be given out. It is understood, however, that space has been leased in the plant of the Jenckes Spinning Co. and 100 to 125 looms will be installed for weaving. Particulars of this company have been given in previous reports.

Rhode Island, Providence. A strike at the Earnscliffe Worsted Mills, caused by the discharge of a weaver, who it is claimed produced badly defective cloth, has been called off and the strikers have returned to work.

Rhode Island, Providence. The Independent Cotton Mfg. Co. has been granted a charter with capital stock of $200,000 divided into shares of $1.00 each. The incorporators are John B. Blair of Albion, Louis A. De Blois of South Elmwood and Emile A. Paquette of this city. The headquarters of the concern will be in Lincoln.

Rhode Island, Woonsocket. It is again rumored that a manufacturer connected with the cotton industry in France is interested in locating a new mill in this city.

Rhode Island, Pawtucket. The Slater Mfg. Co. has been incorporated with capital stock of $400,000. Frank A. Sayles, Stephen A. Jenks, Edward S. Bowen, George E. Martin, James R. McColl and William H. Harriss are the incorporators. The new corporation is a reorganization of the Slater Cotton Co., one of the oldest manufacturing concerns in this city. The capital stock of the old company was $360,000 and the officers were F. A. Sayles, president; A. Lockwood Danielson, treasurer, and E. H. Howard, agent. The new officers are Frank A. Sayles, president, and William H. Harriss, treasurer and agent. J. T. Kirk continues as superintendent. The plant is in operation and we are advised that no changes in machinery equipment will be made. 25,200 ring and 27,704 mule spindles, 48 broad and 1,317 narrow looms are running on shirtings and lawns.

Rhode Island, Woonsocket. Machinery for the Grey Rock Glove Co., incorporated in New Jersey with capital stock of $50,000, is arriving and being set up. The new industry will be located in the Burdick Building on Railroad St. Howard F. Burdick of this place is treasurer and secretary and Everet E. Pike of Dodge, Mass., is manager. This item is of especial interest on account of the cotton cloth to be used being manufactured by C. W. Pike in his satinet mill at Dodge, Mass.

Rhode Island, Woonsocket. The French Worsted Co. is running its plant on full time and reports an increasing demand for yarns from the men's wear trade. The full equipment of machinery proposed for this plant has not been installed. Ten thousand spindles are operated on worsted yarns, French system.

South Carolina, Bennettsville. T. B. McLaurin would like particulars on the manufacture of cotton towels. He would like details and prices of machinery required and the profits made in this branch of cotton manufacturing.

*South Carolina, Edgefield. The Edgefield Mfg. Co.'s cotton mill is shut down and will remain closed until the Court orders manufacturing resumed. It was reported last week that T. I. Hickman of Augusta, Ga., and A. S. Tompkins of this place have been appointed receivers. It is likely the property will be sold for reorganization. It is claimed the assets will meet all obligations. Tentative reorganization plans have been put forward which include the issuing of new stock and enlarging the mill.

*South Carolina, Union. The property of the Aetna Cotton Mills will be again offered for sale November 17. $225,000 has been fixed as the upset price for this sale.

Tennessee, Erwin. A proposition is being considered by the Southern Electric & Power Co. for the location of a cotton mill at this place.

Texas, Paris. Efforts are being made to induce cotton manufacturing companies to locate in this city. John H. Camp has charge of the matter.

Iowa, Des Moines. It is reported that R. B. Dennis of this place and associates have leased two floors of a building on East Grand Ave. and it is reported will install knitting machines for manufacturing men's hosiery.

Iowa, Shenandoah. At the receiver's sale of the Shenandoah Knitting Mills property, the knitting mill was bought by D. E. Bute for $8,100. It is supposed that Mr. Bute represents a company which will reorganize and put the mill on its feet again. The proceeds of the sale will not pay the indebtedness of the company and the stockholders will get nothing. The plant contains 65 latch needle knitting machines, 19 ribbers and 17 loopers, operated on seamless cotton half hose.

*Kentucky, Louisville. The incorporation of the New Albany Hosiery Co. with capital stock of $35,000 is again reported. This was reported in July, but nothing was done toward starting business.

*Massachusetts, Brockton. The total loss suffered by the Harding Knitting Co. in the recent fire was not over $25 and this was due wholly to water getting on the stock. No new machinery equipment is required.

Massachusetts, Wakefield. Announcement has been made that the Harvard Knitting Mill, Winship, Boit & Co., will run on six days' schedule in the future. The management of this company has been very conservative and curtailed extensively throughout the summer therefore the resumption of the full production is understood to mean that business on their lines is approaching normal conditions. Fine ribbed underwear in cotton, wool, worsted, silk and merino, is manufactured on 400 latch needle knitting machines and 360 sewing machines. They buy yarns.

Michigan, Williamston. The Knit Goods Mfg. Co., a concern manufacturing sweaters, coats and fancy knit goods, giving employment to ten hands, is doing a good business. B. I. Lockwood is buyer and in charge of the plant. Geo. Linn is financially interested with Mr. Lockwood in the concern.

New Jersey, Passaic. Additional employes are being put to work in the Botany Worsted Mills.

New York, Poughkeepsie. The Lindenwald Mills, C. F. Hoag, proprietor, do not seem to be affected by the general depression and are running nights in an endeavor to fill orders promptly.

*New Jersey, Salem. A statement has been made in some quarters that the Chester Knitting Co. of Royersford, Pa., was negotiating with D. Harris Smith, receiver for the Salem Knitting Mills of this place, for the purchase of the Salem Mills plant. We are advised that the Chester Knitting Co. is not considering any such proposition.

New York, Amsterdam. Reports that the Blood Knitting Co. have bought real estate on Market St. are incorrect. The property referred to is in the retail district of the city and was purchased by James and John R. Blood for investment purposes. No changes contemplated in the knitting plant at the present time.

Personals.

A. W. Kennedy, of Manayunk, Philadelphia, Pa., has accepted a position as overseer of carding at the Burdett Mfg. Company, Kansas City, Mo.

Geo. Kean has accepted the position as overseer of carding at the Lawton Mills Corporation, Plainfield, Conn. He comes from White Rock, R. I.

Wm. H. Bonney, overseer of the mule spinning department at the Hebron Mfg. Company, Hebronville, Mass., has resigned and accepted a similar position with the Glasgo Yarn Mills, Glasgo, Conn.

James Hillens, formerly overseer of finishing at the Peace Dale Mfg. Company, Peace Dale, R. I., has accepted the position as overseer of finishing at James & E. H. Wilson's Mill, Pittsfield, Mass.

Thomas M. Constable, connected with several manufacturing organizations in Charlotte, N. C., has severed his connection with them and will associate himself with Messrs. Catlin & Company, New York, as their Southern representative.

Thomas D. Peck, for many years connected with the firm of J. L. & T. D. Peck Mfg. Company, Pittsfield, Mass., is to retire from active business.

Jos. Greenwood, overseer of spinning at the Stafford Worsted Company, Stafford Springs, Conn., has severed his connection with that company.

James Galvin, overseer of carding at the Chace Mill, Webster, Mass., has severed his connection with that company. He is succeeded by Edward T. Prendergast, of Uxbridge, Mass.

Fred Wenzel, formerly connected with the Preston Yarn Company, Norwich, Conn., is now overseer of spinning at the D. W. Ellis & Son's mill, Monson, Mass., succeeding Edward Oakes.

James C. Bothwell, overseer of carding and spinning at the Camden Woolen Company, Camden, Me., has severed his connection with that company.

Abraham Miller has accepted the position as designer at the R. I. Worsted Company, Stafford Springs, Conn. He comes from Woonsocket, R. I.

William Years has been promoted to the position of second hand in the dye house at the R. I. Worsted Company, Stafford Springs, Conn.

Isaac Wharmby, for seventeen years connected with the Kerr Thread Company of Fall River, has severed his connection with that company to accept the position as superintendent at the Cohannet Mills, Taunton, Mass.

William N. Thornton, Jr., who is an instructor in the department of chemistry at the Massachusetts Agricultural College, has accepted a position as head chemist of the Virginia Geological College.

Thomas Linehan, overseer of the finishing department at the Rochdale Woolen Mills, A. Howarth & Son, has severed his connection with that company. His successor is Fred Ruskin, who has been promoted to the position.

Charles W. Thompson, general superintendent of the Renfrew Mfg. Company, Adams, Mass., is to succeed J. Nelson Sanderson as agent, Mr. Sanderson having retired from active business.

John H. Morrisey, for the past few years overseer of the cloth room at the Hamilton Woolen Company, Amesbury, Mass., has severed his connection with that company and accepted a similar position at Warren, R. I.

Edwin H. Knowles has accepted the position as overseer of finishing at the Durham Cotton Mfg. Company, East Durham, N. C. He was formerly employed at the Whittenton Mfg. Company, Taunton, Mass.

W. R. Smith has accepted as designer for the Cleveland Worsted Company, Cleveland, O. He comes from Providence, R. I.

J. A. Thompson has accepted the position as superintendent of the Adelaide Mills, Anniston, Ala. He was formerly employed at the Eagle & Phenix Mills, Columbus, Ga.

O. F. Veal, overseer of carding at the Pelham Mills, Pelham, Ga., has resigned.

H. E. Kohn has been promoted to the position as overseer of weaving at the Glenn-Lowry Mills, Whitemire, S. C., to succeed Mr. Thomason.

J. H. Pettes has accepted the position as overseer of carding at the Winder Cotton Mills, Winder, Ga.

J. P. Wingate, superintendent of the Rodman-Heath Cotton Mill, at Waxhaw, N. C., has resigned. The position will be filled by L. D. Gribble, who has been overseer of carding and spinning at this mill.

James Creighton, for more than twenty years overseer of the wet finishing department of the Wm. Tinkham Company, Harrisville, R. I., has severed his connection with that company.

Charles North has accepted the position as overseer of finishing at the Livingston Worsted Company, Washington, R. I. He was formerly employed at the Marston Worsted Mills, Skowhegan, Me., and succeeds Mr. Oldfield.

Henry M. Templeton, who resigned the position as overseer of finishing at the Broad Brook Company, Broad Brook, Conn., has accepted the position as overseer of finishing at the Wood Worsted Mills, Lawrence, Mass., it is reported.

J. W. Robbins, overseer of weaving at the Salmon Falls Mfg. Company, for the past year, has resigned to accept a position as superintendent of the Pepperton Mills, Jackson, Ga.

Wm. Ballantyne has accepted the position as night overseer of finishing at the Rochdale Mills, Rochdale, Mass.

Edward J. Doheny, for a number of years overseer of dyeing at the Saranac Mills, Blackstone, Mass., has accepted the position as overseer of dyeing at the Wm. Tinkham Company, Harrisville, R. I.

Chas. B. Jennings has accepted the position as superintendent of the Guerin Spinning Company, Woonsocket, R. I. He was formerly employed at the Perry Yarn Co., Webster, Mass.

Wm. P. Holt has been appointed general manager of the Hope Mills Mfg. Company, Hope Mills, N. C. He has been employed in several large New England mills and considered an exceptionally good man at his business.

Winthrop Parker, superintendent of the Queen City Cotton Company, Burlington, Vt., has severed his connection with that company.

Samuel Taylor, superintendent of the Soule Mills, New Bedford, Mass., was united in marriage to Miss Blanche F. Smith of that city. They will take up their residence at 34 Pearl St.

John Quinn, for a number of years superintendent of the finishing department at the Earnscliffe Mill, Olneyville, R. I., has severed his connection with that company. Mr. Quinn has been employed in the finishing department for a number of years, having taken the position soon after the mill was established.

Mrs. Annie N. Briggs, wife of Geo. H. Briggs, recently retired superintendent of the N. E. Cotton Yarn Company, Taunton, Mass., shot herself through the right temple at an early hour Tuesday, October 6, and died instantly.

Daniel Schofield, superintendent of the Textile Mills Corporation, New Orleans, La., has resigned. He was formerly employed as superintendent of the Harmony Grove Cotton Mill, Commerce, Ga.

Michael Ryan, for the past five years foreman in the white room for the Apponaug Company, Apponaug, R. I., has severed his connection with that company.

A. M. Fairly is superintendent of the Ashby Mills, Emporia, Va. He succeeds M. R. Vicks.

G. D. Barlow, superintendent of the Dillon and Maple Mills at Dillon, S. C., has been appointed superintendent of the mill at Hamer in connection with his other duties.

John J. Maloney, superintendent of weaving at the Hope Mills Mfg. Company, Hope Mills, N. C., has resigned.

Geo. F. Shipp, formerly superintendent of the Millen Mills, but more recently superintendent of the A. & G. Mills, Quitman, Ga., is now superintendent of the Georgia Mfg. Company, Gainesville, Ga.

E. A. Kigwein of the Jenckes Spinning Company, Pawtucket, R. I., has accepted a position in charge of the cotton carding department at the Arlington Mills, Lawrence, Mass.

John E. Kelly has accepted the position as overseer of finishing at the Rock Mfg. Company, Rockville, Conn. He was formerly employed at Watervliet, N. Y.

Samuel Antcliffe has accepted the position as overseer of dyeing at the Rosemont Dyeing Company, Woonsocket, R. I. He was formerly employed at the Brightwood Mfg. Company, North Adams, Mass.

James Kershaw has accepted the position as overseer of the padding department at the Glenlyon Dye Works, Pawtucket, R. I. He was formerly employed at the Hampton Company, Easthampton, Mass.

Wm. C. Green, treasurer of the Peace Dale Mfg. Company, Peace Dale, R. I., has resigned. He has been associated with the above company for fifteen years.

Charles Marvin, chemist for the Crystal Springs Dyeing & Bleaching Company, Fall River, Mass., has resigned.

Walter D. West has accepted the position as superintendent of the Knoxville Woolen Mills, Knoxville. Tenn., succeeding F. E. Rollinson. Mr. West comes from Conshohocken, Pa.

Wm. E. Holmes, for several years superintendent of the Hammond & Knowlton Mill, silk manufacturers, Putnam, Conn., has accepted a position as superintendent of a large silk mill in Canada.

J. B. Parker from Macon, Ga., has accepted a position as overseer of spinning at the Bibb Mfg. Company, Porterdale, Ga.

Wilton Ensor has accepted the position as superintendent of the Wampum Mill, Lincolnton, N. C. He comes from Baltimore, Md.

William Miller has accepted a position as overseer of carding and spinning at the Great Falls Mfg. Company, Rockingham, N. C. He comes from the Icemorlee Cotton Mills, Monroe, N. C.

J. P. McGraw has accepted a position as overseer of weaving at Walterboro, S. C. He comes from Columbia, S. C.

J. T. Gribble has accepted a position as overseer of carding and spinning at the Rodman Heath Company, Waxhaw, N. C. He comes from Charlotte, N. C.

James Sherman has resigned his position in the finishing room at the Taconic Mills, James & E. H. Wilson, Pittsfield, Mass., to accept a position in the finishing department as second hand at the Broad Brook Company, Broad Brook, Conn.

James Booth has accepted a position as cloth examiner in the weaving department at the Taconic Mills, James & E. H. Wilson, Pittsfield, Mass.

W. D. Ingle has accepted a position as overseer of weaving at the Merrimack Mills, Huntsville, Ala. He was formerly employed at the Fulton Bag & Cotton Mills, Atlanta, Ga.

Luther Burris has been promoted to the position as second hand in the weaving department at the No. 2 Mill of the Fulton Bag & Cotton Mills, Atlanta, Ga.

H. W. White has accepted the position as superintendent of the Gem Yarn Mill, Cornelius, N. C.

J. B. Bagley, a graduate of the A. & M. College of North Carolina, has been elected professor of textile engineering in the Agricultural and Commercial College of Texas.

J. S. Muir has accepted the management of the mills of D. A. Tompkins of Charlotte, and also of the mills at High Shoals, N. C.

A. L. Holden has accepted a position as superintendent of the Rocky Mount Mills, Rocky Mount, N. C., succeeding F. C. Ferguson.

Robert G. Brown has accepted the position as overseer of carding at C. B. Alling's Mill, Derby, Conn. Was formerly employed at Winsted, Conn.

Christopher Patten has accepted the position as overseer of spinning for A. D. Carter, Tilton, N. H.

Jos. H. Dupuis, a foreman at the Springfield Blanket Mills, Springfield, Mass., has severed his connection with that company.

Edward J. Driscoll, bookkeeper at the North Village Cotton Mills, Webster, Mass., has resigned to accept a similar position at Farnumsville, Mass.

There has been organized among the heads of the Cocheco Mfg. Company, Dover, N. H., a social body to be known as the Cocheco Textile Association, comprising about fifty members, limited to the heads of the different departments and including as honorary members, C. H. Fish, agent; H. W. Owen, superintendent of the cotton mills; R. A. S. Reoch, superintendent of the print works; Thos. Kelly, superintendent of the velvet mill. Suitable quarters are being prepared which will be ready for occupancy about October 1st. The board of officers elected were A. E. Bickford, president; T. W. Thornton, vice president; F. C. Hall, secretary; W. F. Milner, treasurer. An executive committee has also been elected: A. E. Bickford, chairman; W. C. Pierce, J. C. Ray, E. O. Crosby and J. W. Davy.

M. J. Burke has accepted the position as overseer of finishing at the Riverside Woolen Mills, Stafford Springs, Conn.

Geo. Wilman has accepted a position as overseer of dyeing at the Beebe-Webber Company, Holyoke, Mass. He was formerly employed at Blackinton, Mass,

S. N. Anderton has accepted a position as overseer of dressing at the Montrose Woolen Company, Woonsocket, R. I. He was formerly employed at the Atlantic Mills, Olneyville, R. I., and succeeds Harry Brooks.

Thomas Parkil, overseer of dressing on the night shift at the Earnscliffe Worsted Mills, Providence, R. I., has been transferred to the day shift succeeding James Blackwood.

B. H. Churchill has been appointed manager of the Stayton Woolen Mill Co., Stayton, Ore. He succeeds Geo. Sault, who has accepted a position with the new company at Gordon Falls, Ore.

Jos. Mercer, assistant bookkeeper at the Windham Mfg. Company, Willimantic, Conn., has severed his connection with that company.

James Maher has accepted the position as second hand in one of the departments at the Sayles & Prendergast's Mill, Woonsocket, R. I.

A. B. Cook has accepted the position as overseer of slashing and drawing-in at the Louise Mills, Charlotte, N. C.

Sanford Scruggs has accepted a position as overseer of weaving at the Chapel City Mills, Columbia, S. C. He was formerly employed at the Granby Mills, same city.

J. Arthur Atwood, agent of the Quinebaug Mills, Danielson, Conn., also agent of the Wauregan Mills, Wauregan, Conn., has been appointed general manager of the Quinebaug, Wauregan and Lockwood Mills of Waterville, Me. The appointment was made at the last meeting of the stockholders. Mr. Atwood will have an office at Providence, but will continue his residence at Wauregan, Conn.

Jos. F. King has resigned as overseer of dyeing at the Scotia Worsted Mills, Woonsocket, R. I. His succeccor is James Minto, Sr.

Frank B. Mowry, overseer of the carding department of the Davis & Brown Woolen Company, Uxbridge, Mass., met with a serious accident on October 1st which resulted in the breaking of his left forearm in two places and dislocating two bones in the wrist. He was in the act of starting a card when his hand caught between the belt and pulley.

Samuel F. White, overseer of carding and spinning in the flax department at the Stevens Mfg. Company, Fall River, Mass., has resigned to accept a position as superintendent of the Chelsea Fibre Mills, Brooklyn, N. Y.

Jas. H. Smith, for over 30 years superintendent of the Quinebaug Company, Danielson, Conn., has been appointed agent and J. Walter Atwood, superintendent of the Wauregan Mills has been made agent of the Wauregan Mills, Wauregan, Conn.

Willis W. Gray has accepted the position as overseer of spinning at Cook, Emert & Company, Somerset, Pa. He comes from Bridgton, Me.

C. H. Chisholm, overseer of dressing, spooling, etc., of the Hebron Mills, Hebronville, Mass., has severed his connection with that company.

William Jeffreys has accepted the position as overseer of carding at the Hartford Woolen Company, Hartford, Vt. He comes from Trenton, N. J.

Bradley M. Rockwood, treasurer and manager of the Norfolk Woolen Company and also a director of the Franklin National Bank, Franklin, Mass., has been elected to the State Senate from the second Norfolk district.

C. H. Harford, superintendent of the Davis & Brown Woolen Company, Elmville, Conn., and Miss Grace Daniels were united in marriage at Willimantic, Conn., recently.

James Fraser has accepted the position as overseer of dyeing at Dexter, Richards Sons Company, Sugar River Mill, Newport, N. H.

J. H. Pickford, superintendent of the Fred L. Sayles Company, Pascoag, R. I., has severed his connection with that company. Mr. Pickford was formerly employed at Clinton, Mass., previous to taking the position at Pascoag.

James W. Booth, overseer of spinning at the Bibb Mfg. Company, Columbus, Ga., for the past four years, has severed his connection with that company.

Charles North has accepted the position as overseer of finishing at the Livingston Worsted Company, Washington, R. I., succeeding Benjamin Oldfield, who resigned to take a trip abroad.

Joseph Burrans has accepted a position as overseer of dyeing at the Princeton Worsted Company, Trenton, N. J.

Robert Blackwood has accepted the position as superintendent of the Fred L. Sayles Company, Pascoag, R. I., succeeding J. W. Pickford, who resigned.

John Riley, overseer of spinning at the Dominion Cotton Mills Company, Magog, Quebec, Canada, has severed his connection with that company.

J. Armstrong has severed his connection as overseer of dyeing at the Niantic Mfg. Company, East Lyme, Conn. His successor is James B. Daye.

John Kernan has accepted the position as overseer of carding at the Sykes Woolen Mills Company, Reynoldsville, Pa. He comes from Chambersburg, Pa.

Laniel Littlewood has accepted the position as overseer of dyeing at the Sykes Woolen Mills Company, Reynoldsville, Pa. He comes from Philadelphia.

M. J. Shaughnessey has accepted the position as superintendent of the Oella Mills, Oella, Md. He was formerly employed at Chapinville, Mass.

A. E. Edmonds has accepted the position as designer at the Minterburn Mills, Rockville, Conn. He was formerly employed at Blackinton, Mass.

Ellis Foster has severed his connection with the Arlington Mills, Lawrence, Mass., as overseer of the spinning department.

John Quinn has withdrawn his resignation from the Earnscliffe Worsted Mills, Providence, R. I., and will remain in his present position instead of accepting the position at the Peace Dale Mfg. Company, Peace Dale, R. I., which has been reported.

Geo. K. McGaw has been elected vice president of the Consolidated Cotton Duck Company, Baltimore, Md.

William Dickinson, overseer of carding at the Hanover Woolen Mfg. Company, Hanover, Ill., died at his home of blood poison at the age of 77 years.

Winthrop Parker, superintendent of the Queen City Cotton Company, Burlington, Vt., has severed his connection with that company.

L. Olonette has accepted a position as overseer of dyeing at the Lafayette Worsted Mills, Woonsocket, R. I.

Edward Doheny, who recently accepted a position as overseer of dyeing at the Tinkham Mill, Harrisville, R. I., has severed his connection with that company and is succeeded by Gustaf Prevost, who was formerly employed at the Lafayette Worsted Company, Woonsocket, R. I.

The Philadelphia Textile Overseers' Association has been organized recently with William Secor as president; James Stock, vice president; John Bellis, treasurer; A. Mugford, secretary; and H. Nelson Craig, assistant secretary. The chief object will be the education of its members in the technical knowledge of all things pertaining to textile manufacturing. The association numbers 26 and each applicant must be an overseer in some department before he is accepted.

John H. Burrans, overseer of dyeing at the R. I. Worsted Company, Stafford Springs, Conn., for the past year, has severed his connection with that company.

John Fitzgerald has accepted the position as overseer of warping, spooling and twisting for the Hebron Mfg. Company, Hebron Mills, Hebronville, Mass. He comes from the Indian Orchard Company, Indian Orchard, Mass.

John A. Hargreaves, overseer of carding at the Hope Mills, Phenix, R. I., and Miss Clara B. Cross were married at the Hope M. E. Church. Both are well known residents of Hope Village.

W. E. Crockett has entered the employ of the Houlton Woolen Mills, Houlton, Me., in their knitting department.

Eugene A. Wheelock, treasurer of the Putnam Woolen Company, Putnam, Conn., and Miss Ella M. Rockwell of Worcester, Mass., were married recently at the home of the bride in Worcester.

Francis J. Moore has accepted the position as cloth examiner in the finishing department at the Dunn Worsted Mills, Woonsocket, R. I. He comes from Lawrence, Mass.

Arthur Woodward, overseer of dyeing departments 11 and 12 of the N. E. Cotton Yarn Company, Taunton, Mass., has severed his connection with that company to accept a position in Lewiston, Me.

Jacob Ashler, overseer of carding at the French River Textile Company, Mechanicsville, Conn., has accepted a position as boss carder at the Chase Mills, American Woolen Company, Webster, Mass., succeeding Edward T. Pendergast.

Joseph M. Newsome, overseer of dyeing at the Princeton Worsted Mills, Trenton, N. J., has severed his connection with that company to accept a position in charge of dyeing and finishing at the Southwark Mills, 8th and Tasker Sts., Philadelphia, Pa.

H. E. Junier has accepted the position as overseer of twisting, winding and doubling at the Champlain Silk Mill's branch mill at Brooklyn, N. Y. He was formerly employed at the R. I. Worsted Company, Stafford Springs, Conn.

Thomas E. Young has been promoted to the position as second hand in the twisting department of the R. I. Worsted Company, Stafford Springs, Conn., and Edgar Young has been promoted to the position as third hand in the spooling department at the same mill.

R. E. Walsh has accepted a position as overseer of dyeing at the New York Mills, New York Mills, Oneida Co., N. Y.

Clarence Elliott, overseer of finishing at the Cocheco Woolen Mfg. Company, East Rochester, N. H., has severed his connection with that company.

James Ridyard, formerly superintendent of the Scotia Worsted Mills, Woonsocket, R. I., has accepted a responsible position with the U. S. Bunting Company, Lowell, Mass.

J. E. Bradley has accepted the position as overseer of dyeing at the Talcott Bros., Talcottville, Conn., succeeding W. Gammons. Mr. Bradley comes from Rockville, Conn.

Fred Jackson has accepted the position as overseer of dyeing at the Rosemont Dyeing Company, Woonsocket, R. I. He comes from Winooski, Vt.

William Delaney has accepted the position as overseer of carding at the Camden Woolen Company, Camden, Me. He was formerly employed at the Mt. Battie Mfg. Company of that town, previous to the closing of the mill.

William A. Phillips, boss mechanic at the Rodman Mfg. Company, Lafayette, R. I., died at his home, October 9, very suddenly.

J. M. O'Brien, superintendent of the Edgemere Mfg. Company, Great Barrington, Mass., was presented with a handsome silver tea service, a traveling case and a pipe by the help under his employ on his retirement from the company. E. Hocking, foreman of the bleachery, made the presentation speech.

John Robbins, overseer of weaving at the Salmon Falls Mfg. Company, Salmon Falls, N. H., has resigned and it is reported will accept a position at Atlanta, Ga.

John J. Brophy, who has been employed at the Amoskeag Mfg. Company, Manchester, N. H., as cotton sampler and inspector, died at his home in that city as a result of heart failure.

J. B. Curtis has been engaged as overseer of dyeing at the Wakefield Mfg. Company, Wakefield, R. I. He was formerly second hand at the Peace Dale Mfg. Company, Peace Dale, R. I.

A. A. Orford, overseer of the weaving department for the Falls Company, Norwich, Conn., has taken a similar position with the Hamilton Woolen Company, Amesbury, Mass.

Joseph Butler, overseer of finishing, has reentered the employ of the Litchfield Worsted Mills, Clinton, Mass., succeeding Frank E. Brazeal, who has returned to Monson, Mass.

Wm. H. Harris has been elected treasurer and agent of the Slater Cotton Mill, Pawtucket, R. I. Mr. Harris has large interests in Southern cotton mills.

J. D. Hammett of Honeapath, S. C., was today elected president of the Anderson and Brogan Mills at Anderson, S. C.

Raymond S. Bartlett, agent of the Ray Mills, American Woolen Company, Franklin, Mass., has purchased the Geo. E. Duffy home on Crescent St

John R. Scott, the oldest manufacturer of woolen goods, it is believed in the Blackstone Valley, celebrated his eightieth birthday at Uxbridge, Mass., recently, where he has been a resident since first going into the manufacturing business. Some years ago he entered the Wheelock Mills of that town and later took the position as designer at the Salisbury Mills, Amesbury, Mass. Was also superintendent of the O. N. Stillman Mill at Westerly, R. I., superintendent at Montville, Conn., and at Stafford Springs, Conn. He was later connected with the Elmville Mill, Uxbridge, Mass., and afterwards in partnership with Charles Wheelock and operated the Wheelockville Mill. A few years ago he and Charles W. Scott took over the plant formerly run by Charles Capron, which plant is now known as the J. R. & C. W. Scott Company.

J. H. Wright has accepted the position as overseer of knitting at the Madisonville Knitting Mills, Madisonville, Tenn. He comes from the Chattanooga Knitting Mills, Chattanooga, Tenn.

Alvin Bendix, superintendent of the Fonda Glove Lining Company, Fonda, N. Y., has resigned and will engage in business at Troy, N. Y.

Wm. B. Callahan, superintendent of the Fenimore Knitting Company, Phoenix Mills, N. Y., has resigned and accepted a position as cotton yarn salesman in the middle west for C. E. Riley & Co., Boston, Mass.

L. L. Moore has accepted the position as boss knitter at the Wisdom Hosiery Mills, Paducah, Ky. He was formerly employed at the Chattanooga Knitting Mills, Chattanooga, Tenn.

Wm. Bennett, proprietor of the Eagle Hosiery Mills, Diamond St., Philadelphia, will retire from active business, it is stated, and wishes to dispose of his plant.

C. H. Hysell has resigned his position with J. Broadbent & Son, Unionville, Conn., as overseer of knitting to accept a similar one at Cincinnati, O.

Geo. B. Stover has accepted a position as general manager of the Fonda Glove Lining Company, Fonda, N. Y. He succeeds Alvin Bendix. Mr. Stover was formerly connected with Van Brocklin & Stover Company, Amsterdam, N. Y.

Joseph Papineau, night watchman at the Aldrich Mfg. Company, Moosup, Conn., was found dead in his room at the Kenyon boarding house in that town after committing suicide by taking poison.

DEATHS.

A. S. Fletcher, vice-president of the Huntsville Cotton Mills, Huntsville, Ala., and also an officer of the First National Bank of that city, died recently in that city.

Robert A. Kenyon, president and general manager of the John J. Kenyon Mfg. Company, has been nominated by the republican committee for a third term as Mayor of the city of Pawtucket, R. I.

Fred S. Taylor died at Worcester, Mass., after undergoing an operation for appendicitis. He was a member of the well known firm of Akers & Taylor, Charlton City, Mass., manufacturers of woolen goods. Mr. Taylor was son-in-law of the late Mr. Akers and had been associated with him for a number of years. He was a well known manufacturer and the news of his death was a shock to his many friends. He is survived by a widow and eight children. Clair S., son of the deceased, has been associated with his father in the manufacturing since the death of Mr. Akers.

Geo. Ashley of the firm of Ashley & Bailey Silk Co., Paterson, N. J., died at his home in that city of heart disease at the age of 64 years.

Francis C. Minor, at one time connected with the firm of Cuthbert, Minor & Gould, manufacturers of flannels and who carried on a business at Gilsum, N. H., some years ago, died after an illness of two weeks. He suffered a shock two days previous to his death. He was a native of Chambly, Canada, and came to this country when 14 years of age. Was also connected with the Gilsum Woolen Mfg. Company.

C. Alexander E. Erwin died at his residence in Brookline, Mass., on Tuesday, October 6th, at the age of 73 years. Mr. Erwin was connected with the Byfield (Mass.) Woolen Co., also the Holliston Woolen Mills, Holliston, Mass., some years ago.

Oliver Crohrbach, proprietor of the Topton Underwear Company, Topton, Pa., was stricken with heart disease while on a Reading excursion train recently and died after being conveyed to a hospital at Lebanon, Pa. He was en route to Gettysburg, Va., and 52 years of age.

Robert Roe died while trying to start an automobile in a garage in the rear of the home of his brother-in-law at 740 Washington St., Dorchester, Mass. Death was due to heart failure. Mr. Roe was superintendent of the Lonsdale Company, Lonsdale, R. I., some years ago.

James H. Holmes, for many years assistant superintendent of the Oella Mills, Oella, Md., died at Cebu, P. I., where he had gone three years ago to visit his daughter. He was 80 years of age.

Francis Pratt, for many years identified with the cotton mill business, died in Providence, Saturday, Sept. 26th. He had been connected with the Dunnell Print Works, also the old Slater Mill.

Frazer V. Sinclair, prominently identified with the silk commission business in New York, died in Richmond Hill, L. I., of pneumonia, followed by an operation for appendicitis. Mr. Sinclair entered the silk trade when a young man, his latest connections being partner in the firm of Eastmond & Sinclair. He leaves a wife, one son and a daughter.

Charles Taylor, a prominent satinet manufacturer of the East and also connected with mills at Charleston, S. C., died suddenly at a hospital at Worcester, after being operated on for appendicitus.

G. Willis White of Norwalk, Conn., died at his home in that place on Sept. 25th. He was connected with the custom house in New York City and considered an expert appraiser of woolen fabrics.

Francis Pratt, one of the oldest residents of Pawtucket, R. I., died at his home, 53 Vernon St., after a long illness. He had been engaged in the cotton mill business and was at one time connected with the Dunnell Print Works. Was later boss printer at Manchester, N. H. Some years ago he was engaged in the cotton mill business in the partnership of Pratt & Moore.

Frederick R. Dawson, for a number of years superintendent of the Saxonville Mills, Saxonville, Mass., and who succeeded his father in the position as manager some three years ago, was found dead in Farnham Brook near Coolidge Bridge, East Sudbury, on the morning of September 30. He had been in his usual health, attended his duties at the mill on Tuesday and remained at the factory until closing time, six o'clock. On reaching home he took his horse and carriage for a drive and later in the evening the horse and carriage were found in the vicinity of his home without a driver. A searching party was organized and the body was found at 9.30 o'clock next morning by the searchers. It was the opinion of some that Mr. Dawson had taken his own life, being worried by the condition of the woolen business, but people who know him well say that he had no cause for worry. Medical Examiner L. M. Palmer decided that it was a case of heart failure and that Mr. Dawson not feeling well, alighted from the carriage, stood on the bridge and fell over into the water.

The death is announced of William Vernon, on Sept. 28, 1908. The funeral was held at his late residence, 2350 E. Susquehanna Ave., on September 29. Mr. Vernon, up to the time of his death, was considered one of the pioneer manufacturers of hosiery in this city, the mill being located at Howard and Palmer Sts., where it has been in operation for many years. Mr. Vernon leaves a widow and two sons, who have been identied with the business for some time and who no doubt will carry it on in the future.

Alfred L. Aubert of Ware, Mass., died at his home on Dale St. at the age of 64 years. He was a chemist by trade and derived an income from formulas for manufacturers of dyes and had spent large sums of money in an attempt to find a substitute for rubber.

John H. Grimes, weaver at the Kent Woolen Mills, Centreville, R. I., committed suicide by drinking a dose of laudanum. He was 31 years of age.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The International Free Trade Congress at London; Published by the Cobden Club, Caxton House, Westminster, S. W.; price 5s. postpaid.

In the promptness with which this report has been issued the publishers have set an example that might be profitably followed in the textile trade. Instead of waiting until the next Congress is nearly due before publishing the report of the last one, the Cobden Club gives us this report within about two months of adjournment and in the form of a well bound volume, with the contents made available for ready reference by an excellent index. It is probably fair to assume that the speakers at this Congress presented their strongest arguments in support of free trade in the year 1908 That makes the volume deserving of the careful study of all protectionists. Too much of it consists of mere assertion, unsupported by facts or argument, but this is a fault that is inseparable from such a meeting, regardless of the right or wrong of the question. Scattered through the volume, however, are the records of earnest attempts to support the free trade cause by something more convincing than assertion and the show of authority. It is these portions that give the report whatever value it may possess.

Decimals or Duodecimals; by M. P.; British Weights and Measures Association, 12 Exchange St., Manchester, Eng.; price, 25 cents.

This booklet contains a very clear explanation of duodecimals, one that imperceptibly leads the reader to think in twelves instead of tens, which is the primary requisite in the use of the duodecimal system. Nothing daunted by the obstacles to the introduction of the duodecimal notation that are found in the general use of decimals, the author forcibly and enthusiastically presents the undoubted advantages of the former over the latter. He deepens our regret that the inferior system has become so extensively and firmly rooted in the practice of mankind, even though he fails to convince us that the change to the better system can ever be accomplished.

Without committing ourselves as to the possibility of substituting duodecimals for decimals in the work of the world we are free to express the opinion, which was formed during the reading of this book, that such substitution will never be accomplished while the same symbols are used for both systems. There is no confusion so paralyzing as that resulting from the use of the same sign for indicating different values. If duodecimals ever come into general use it will be only after a long period of transition, during which both systems will be in use. The two cannot be used concurrently unless each has its distinctive symbols or figures. A hint of the confusion resulting from the retention of our present symbols in the duodecimal system is given by this book. For example, we find 8.4 indicating by the decimal system what we now express by 8 1/3. It is obvious that if both systems have the same figures the duodecimal 8.4 would be confused with the decimal 8.4. Again the duodecimal 10 (equal to 12) would be confused with the decimal 10. This difficulty would be avoided by the use of distinctive symbols for each system. We venture to suggest to "M. P." that he enlist the cooperation of mathematicians and others in devising 12 distinct characters that can be easily written and read, to be used for the duodecimal notation; and then issue another edition of this excellent little book, using the two sets of symbols for their respective systems of notation. This would help to remove one obstacle that would otherwise make the general use of duodecimals impossible.

Business Literature.

Goulds Hand and Power Pumps; The Goulds Mfg. Co., Seneca Falls, N. Y.

This is an attractive booklet in which various types of rotary power force, boiler feed, double acting and other types of pumps are illustrated and described.

Berry Steam Specialties; Berry Engineering Co., Chester, Pa.

A very interesting and well arranged booklet showing the construction and operation of the Berry Feed Water Regulator and other steam specialties. A number of testimonials and a partial list of users of the products of this concern are given. Half tone illustrations of steam equipments in well known plants showing Berry specialties in operation add to the attractiveness of the booklet.

Knitting Machinery; Wildman Mfg. Co., Norristown, Pa.

This 80-page catalogue is illustrated with full page half tones and a complete description of the company's line of sleevers, underwear and sweater machines, hosiery ribbers, automatic stop motions and electric cloth cutters. There are also several pages devoted to valuable information for the knit goods manufacturer, such as yarn tables, etc.

Goulds Pumps for Every Service; The Goulds Mfg. Co., Seneca Falls, N. Y.

This pamphlet gives an illustrated description of the combination and "Universe" house force pumps. These pumps will no doubt be highly appreciated by the jobber and small dealers, who frequently have but little room for storage purposes.

Boiler Troubles and Their Prevention; The Bird-Archer Co., New York.

This book will interest all who own or operate steam boilers. It explains corrosion, scale, oil and grease deposits and what harm they may do. It tells what scale consists of, how it collects, resulting loss in fuel and steaming capacity, dangers from overheating, cost of mechanical cleaning and the advantage of boiler compounds in preventing scale, oil deposit or corrosion. It further discusses every method of water and scale treatment, gives valuable advice on feeding boiler compounds; the care of blow-off valves, etc. Copies may be had free by addressing The Bird-Archer Co., 90 West St., New York.

An Error Corrected.

The item in the Official American Textile Directory issued in August, stating that the C. A. Root Company of Uxbridge, Mass., was in the hands of a receiver, was an unfortunate error. The company is not and never has been in the hands of a receiver, but has undergone a complete reorganization in its personal and financial status. New officers have been elected, new capital added and the company is quoted now as being on a sounder financial basis than it has ever been. They are operating 54 broad looms on fancy worsted and mixtures.

The New Process Raw Hide Co.

The New Process Raw Hide Co. made a distinct hit with their float in the carnival parade held annually in Syracuse in connection with the New York State Fair.

Their float won first prize in the machinery division, as the "best appointed and most symbolic." It consisted of a globe about five feet in diameter, made of raw hide, supported on an upright shaft passing through the center, and having a bearing at the top and bottom. Around the equator of the globe was a large gear ring of raw hide pinion, carried on an upright shaft with a bearing at the bottom. This pinion was rotated by a chain drive under the wagon, connected with one of the rear wheels and imparted motion to the globe as the wagon moved. Inside the globe were thirty incandescent electric lamps and as New Process raw hide is quite translucent, the effect at night was very striking. The globe was attractively mounted on a float artistically decorated and bearing the motto "New process gears turn the mechanical world."

Big Boiler Stack Erected at Ampere.

The improvements to the plant of the Crocker-Wheeler Company, of Ampere, New Jersey, manufacturers of electrical machinery, have reached the stage where work is being started on the new power house, which when completed will have a capacity of 4,800 boiler h. p. This entire capacity will not be installed at once. To furnish draft for the boilers temporarily, until the complete plant is installed, the company has just erected a steel stack 6 feet in diameter, and 105 feet high.

This stack will supply natural draft to 800 h. p. water tube boilers (burning No. 2 Buckwheat coal) with an ultimate capacity under artificial draft of 1,600 h. p. The boilers are of the modern high pressure water tube type (steel castings) for generating steam at 200 pounds pressure. The furnaces of the boilers are each 9 feet 8 inches wide by 10 feet deep. The breeching connection between the stack and the boilers is 6 feet wide and increases in height as it reaches the stack to provide for future installation of boilers.

The breeching is built of the arched top and bottom plate construction to make it self supporting. The weight of the stack and breeching is approximately 18 to 20 tons and the stack was hoisted into position in one piece, which attests to progress of engineering construction, as this would have been impossible a few years ago. The present stack is to be used temporarily until further development of the plant, at which time it is contemplated to erect permanent brick chimneys. For that reason the stack is located at present in position to provide for future development until the last boiler installation is made, and is erected on one of the future boiler setting foundations. This foundation is built of concrete and that portion on which the base of the stack rests is reinforced with steel. The stack connection to the foundation is provided by means of a cast iron sectional annular ring which is bolted to the foundation and also to the stack.

The stack was designed and erected by the Engineering-Construction office of Mr. Walter Kidde, New York City. It was built by the Dover Boiler Works of Dover, N. J.

Large Mill Heating Contract.

The Anglo-Newfoundland Development Company of Grand Falls, Newfoundland, through their engineer, George F. Hardy of New York, have awarded the contract for heating their immense buildings, now under construction at Grand Falls, to the American Blower Company of Detroit, Michigan. The contract is now being executed speedily and all shipments from the factory are to be completed so as to arrive for transfer to steamer prior to December 1st.

The four sets of apparatus, each consisting of steel plate fan with direct connected engine and heater, have a combined capacity of delivering into the various buildings 267,000 cubic feet of heated air per minute, a total of 13,827 square feet of cast iron indirect radiation being required for heating the air to the proper temperature, and about 25 tons of galvanized steel sheets are required to manufacture the ducts and flues for properly distributing the air.

The part of a paper mill requiring the most particular attention so far as heating is concerned, is the machine room. Long experience has shown that questions of enough heat to keep moisture or fog in suspension, and enough circulation of air to carry off that moisture, can be best solved in the blower system, as the prevention of condensation collecting on the ceiling of roof trusses is a most important item in the machine room.

The entire equipment is sold under a guarantee, and the erection will be superintended by one of the American Blower Company's own men from the factory, thereby assuring of every detail being carried out according to their plans and for the best and most economical working.

American Blower Company's Eastern sales offices are at 141 Broadway, New York.

The Lawton Spinning Co., Woonsocket, R. I., has placed a large repeat order with the American Moistening Company, Boston, Mass., for the complete equipment of their new mill with Humidifiers.

The Orswell Mills, Fitchburg, Mass., have placed a repeat order for Humidifiers with the American Moistening Co., Boston, Mass.

Large Reorders.

The Warren Company, 493 Wells St., Chicago, manufacturers of Warren's liquid pulley cover, have recently received a reorder from one of the largest textile manufacturers in New England, who has used this supply since 1900. This order was for fifteen regular cases, or 1,875 sq. ft., of the material. Their last order prior to this was in January, 1907, for ten regular cases,—1,250 sq. ft. Another recent order from a textile mill in Alabama, where the product was known by reputation, was for 8 regular cases, or 1,000 sq. ft. This pulley covering is especially adapted for use in textile mills, as it reduces belt slipping to a minimum and is not sticky after being applied and ready for use; hence it does not cause lint to adhere to the belts and pulleys, as some belt dressings do.

Under date of August 15th The Warren Company received the following letter from a manufacturer: "Replying to yours of the 12th in reference to your pulley covering, it is the best covering that we have ever used and it has reduced our belt trouble at least 75 per cent. We still have some of your last shipment, but when we need more pulley covering we will send you the order." The Warren Company have manufactured this pulley covering for ten years and invite correspondence relative to prices and other particulars

An Important Point About the Standard 75-1

Belts on sewing machines frequently give lots of trouble. A feature in the new Standard 75-1 Lock Stitch sewing machine, which will be appreciated by manufacturers in this connection, is the substitution of what is practically a flexible gear for the main connection between the upper and lower shafts. This overcomes the objections against belts whether leather or twine, and the machines do not lose the time taken up by exchanging belts, with consequent loss of production as well as the cost of belts.

This connection is made up of indurated fiber links, or teeth, in rows or sets of three or four, twelve sets being in contact with each spur gear or sprocket on upper or lower shafts at all times, eliminating any possibility of the machine getting out of time. It is almost noiseless in operation and its life is claimed to greatly exceed that of any belt connection.

Stephenson Bar Belt Dressing.

The above product, which is manufactured by the Stephenson Mfg. Co., Albany, N. Y., is making for itself quite a reputation, due to the work of the new corps of salesmen which the company are putting out.

The salesmen are twelve young ladies which are sent in monthly instalments in the shape of calendars to their customers and friends, and are well worthy of the cordial reception given them. This company will be glad to send the full series upon application, by stating that they have seen this notice in the Textile World Record.

Waste in Misplaced Advertising.

"Thousands upon thousands of dollars are wasted every day in misdirected, or misplaced, advertising," says Nelson A. Chesnutt, of the Chesnutt Advertising Agency in Philadelphia. "I see it. Every trained advertising man sees it whenever he looks through any publication. And the reason is, that many an advertiser is guided too much by his own personal taste in selecting the advertising mediums. He is accustomed to reading his favorite magazine in his home or at his club; he sees the quantity of ads it carries and he concludes it must be a pretty good medium for his advertising. As a matter of fact, it might be absolutely the poorest medium he could select. It might circulate extensively among people in his station of life, but comparatively little among the class of people who are, or who should be, his customers.

"That is one of the all-important points in successful advertising—to select mediums that are read by the people you want to reach, instead of those you think they ought to read.

"Advertising must be made to suit the nature of the goods. The price, for one thing, affects the choice of mediums to be used. A dollar article for men should be advertised in one class of publication. A ten dollar article for men would go in a largely different class. Why? Because the dollar man and the ten dollar man don't read the same periodicals. If it's a proposition for women the same differentiations apply. And it's like throwing money away to advertise an article suitable only for country people in publications that circulate almost exclusively in the cities.

"The first question we ask a client is, What class of people ought to buy your goods? The answer throws the problem into one big class of mediums, which must be, for various reasons, considerably cut down. The price, the question of freight rates, the facilities the readers of this or that publication may have for buying similar goods, and dozens of other points, will cause paper after paper to be dropped until the process of elimination finally leaves a list of mediums that will produce the maximum of results for our client without material waste. That's the leak in advertising—paying for circulation that's no good to you. Cut that out and the mediums that remain show a better proportion of results. After the list is completed, then it's up to me and the forces of my agency to prepare advertising that will produce the orders.

"There is no such thing as a successful 'cut and dried plan' that will suit anybody's proposition. As a matter of fact, in all our experience we have never yet made up a list of mediums that was an exact duplicate of one previously prepared for some other client. Each has to be treated distinctively and if the advertiser knows what is best for him he will put himself in touch with an experienced advertising man just as if he were ill and called in a physician to make him well. When this is more generally done, the waste of money on misplaced advertising will be materially lessened.

"Things are looking up this fall and more manufacturers than ever are turning their eyes toward the mail order field. It will be a long time,

though, before most of them realize how great is their opportunity in this direction—an opportunity from which a few aggressive ones are at present reaping their millions."

Clark Thread Co. to Use Electric Drive.

One of the most important orders recently booked in the electrical field is that for about 2,500 horsepower of induction motors for the Clark Thread Company, in Newark, N. J. The order itself is of considerable size, but its chief importance is its being the beginning of the electrification of these mills, among the largest cotton mills in the United States. The mill has been driven by several steam engines; and this purchase of induction motors is the first step in electric drive. The order was awarded to the Crocker-Wheeler Company, of Ampere, N. J., after a thorough investigation extending over a period of ten months. It was thus awarded because of the thorough confidence on the part of the Clark Thread Company that the Crocker-Wheeler engineers knew how to solve the intricate electrical problems met with in textile work. The high efficiency, high power factor, economy of operation and excellence of design and workmanship embodied in Crocker-Wheeler machinery were strong points, but the fact which finally determined the mill to give the order to the Crocker-Wheeler Company was the excellent showing made by the Crocker-Wheeler engineers in the previous equipment of a number of large cotton mills in the United States and Canada. The motors are 5,500 volt, 60 cycle, 3 phase machines and the present order aggregates about 2,500 horsepower, the motors ranging from 25 to 150 horsepower each.

Soft Water Saves Fuel.

Steam users are beginning to realize and appreciate more and more the economic advantages of soft, clear water for boiler feed. Those not so fortunate as to have an available supply which does not cause scale or corrosion, or both, are installing water softening and purifying systems to remove the objectionable substances from the water before feeding into the boilers. This is the only rational method when the supply available is not what it should be. Wm. B. Scaife & Sons Co. of Pittsburgh, Pa., manufacturers of the Scaife and We-Fu-Go water softening and purifying systems, report an extremely satisfactory year's business. Among some of their recent contracts are the following:

Eastman Kodak Co., Rochester, N. Y., 3,000 h. p. We-Fu-Go system; Armstrong Cork Co., Pittsburgh, Pa., 2,250 h. p. We-Fu-Go system (2d order); Rochester & Pittsburgh Coal & Iron Co., Punxsutawney, Pa., 750 h. p. We-Fu-Go system (7th order); Pittsburgh-Buffalo Co., Burgettstown, Pa., 1,000 h. p. We-Fu-Go system; Gowanda State Homeopathic Hospital, Gowanda, N. Y., 750 h. p. We-Fu-Go system; Fort Pitt Hotel Co., Pittsburgh, Pa., 1,000 h. p. Scaife system; Rochester, Syracuse & Eastern Ry. Co., Syracuse, N. Y., 250 h. p. Scaife automatic system.

National Association of Woolen and Worsted Overseers.

Office of the Secretary,
Clinton, Mass., Nov. 1, 1908.

The twenty-sixth annual meeting of the N. A. of W. & W. O. will be held at the American House, Hanover Street, Boston, Mass., on Saturday, November 21st, at 10 a. m. sharp. Reports of the Secretary and Treasurer and of other committees will be read and any other business of importance which may come before the Association will be transacted.

The following were nominated for officers at the May meeting, election to be made at this meeting. Applicants for membership will not be allowed to attend this meeting, under our laws passed in May, 1906. For President, James E. O'Kell, of Pascoag, R. I. For First Vice-President, F. P. Gallagher, of Woonsocket, R. I. Second Vice-President, James H. Pickford, of Clinton, Mass. Third Vice-President, William Lacey, Pascoag, R. I.; Louis Allison, Worcester, Mass.; Lees Mallison, Mapleville, R. I.; Joseph Schofield, Uxbride, Mass. For Secretary, Walter Pickford, of Clinton, Mass. For Treasurer, Thomas Buchanan, of Hyde Park, Mass. For Secretary Beneficiary Department, Henry Morey, Danielson, Ct. For Treasurer Beneficiary Department, Thomas Buchan, of Hyde Park, Mass. For Trustees, John Thornton, of Chepacket, R. I., Eleazar Davies, of Plymouth, Mass., Louis Carmack, of Providence, R. I.

Banquet, free to members, will be served promptly at 1 p. m. Brothers intending to be present will confer a favor to the committee in charge by filling out the return postal and mailing it AT ONCE, as the committee must give notice of how many will be present by the 18th. DO IT NOW!

James McDowell, President.
Walter Pickford, Secretary.

A Yard of Dates.

Max Sarfert, proprietor of the Germania Dye Works, Kensington and Allegheny Aves., Philadelphia, has recently issued for distribution among the manufacturers of textiles, a calendar which no doubt will be appreciated from the fact that the dates are in large and comprehensive figures which can be seen at a distance and noted at once. The calendar also contains reading matter appertaining to Mr. Sarfert's business and explains to manufacturers that he is equipped for dyeing cotton yarns on parallel tubes, etc., having equipped his plant with new and up-to-date machinery for this purpose and with which he is meeting with great success. He also makes a specialty of dyeing, coning, twisting and tubing of yarns of all kinds, dyes cotton warps and hosiery in fast black and colors, and furnishes yarns on dresser spools. Mr. Sarfert would be glad to furnish the calendar to any one desiring same upon application to him at the above address.

Recent Textile Patents.

CARDING MACHINE. 901,045. James Stewart, Grand Rapids, Mich.

CLOTH CUTTING Machine Base. 901,439. John P. Gury, St. Louis, Mo.

DYEING APPARATUS. 902,271. Henry Anner, Phillipsburg, N. J., assignor to Standard Silk Co., New Jersey.

DYEING, WASHING and Stripping Machine. 901,004. Henry Hennig, Paterson, N. J.

FABRIC MACHINE for Unraveling Textile. 900,451. Paul F. Vogel, Clinton, Tenn.

KNITTED FABRIC and Making Same. 901,264. Robert W. Scott, Leeds Point, N. J., assignor of one-half to Louis N. D. Williams, Ogontz, Pa.

KNITTING MACHINE, Circular. 901,924. Herbert B. Taylor, Philadelphia, Pa.

KNITTING MACHINE, Rib. 901,840. Robert W. Scott, Leeds Point, N. J., assignor of one-half to L. N. D. Williams, Ogontz, Pa.

KNITTING MACHINE Web-holder. 901,834. Robert W. Scott, Leeds Point, N. J.

LOOM. 901,764. Fred T. Whitee and Robert White, Springfield, Mass.

LOOM. Automatic Filling-repienishing. 902,325. Alonzo E. Rhoades, Hopedale, Mass.

LOOM for Weaving Pile Fabrics. 900,136. Benjamin Walker, Shelley, and Alfred Spink, Leeds, England.

LOOM for Weaving Short Weft Fabrics. 902,268. Julius Garst, Worcester, Mass.

LOOM Fork Grid. 900,591. Alonzo E. Rhoades, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM Filling-carrier Magazine. 902,193. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM Harness. Brushing Machine for. 900,994. Myron Fish, Central Falls, R. I.

LOOM Heddle Adjustment. 901,927. Fred T. Whitee and Robert White, Springfield, Mass.

LOOMS. Mechanism for Operating Shuttles of Narrow-ware. 901,834. Henry Riehl, Philadelphia, Pa.

LOOM. Needle. 902,203. John C. Brooks, Paterson, N. J.

LOOM Protector Mechanism. 900,403. William J. Lutton, Paterson, N. J.

LOOMS. Selvage-forming Mechanism for Short-weft. 901,941. Frederick E. Arrouquier, Westbrook, Me., assignor to Goodall Matting Co., Kennebunk, Me.

LOOM-SHUTTLE. 901,928. Fred T. Whitee and Robert White, Springfield, Mass.

LOOM Stop Motion Mechanism. 900,190. Geo. McCartney, Harrisville, R. I.

LOOM Threading Machine. Carpet. 902,229. Hugo Heyman, Gottenborg, Sweden.

LOOM Warp Beam. 900,530. Rebecca Harbour, Charlie, Texas.

SPINNING and Twisting Machines. Flier for. 901,226. Geo. L. Brownell, Worcester, Mass.

Recent Textile Trade Marks Registered.

"Unitee." Children's Knitted Combination Underwaists, Undershirts, etc. Utica Knitting Co., Utica, N. Y.

"Cow Hide Brand." Pants to be Worn by Men and Boys all Made of Cotton Fabrics. Southern Mfg. Co., Chester, S. C.

"Manantico." Dyed Cotton Piece Goods. The Millville Mfg. Co., Philadelphia, Pa.

"Paragon." Night-shirts, Pajamas and Smoking Jackets. The Paragon Co., New York.

"Reis Underwear." Men's Drawers and Undershirts. Robert Reis & Co., New York.

"Condenette." Undershirts and Drawers. Frederic Conde, Oswego, N. Y.

"Remlap." Men's, Women's and Children's Drawers and Undervests. Jesse V. Palmer Co., Greenwich, N. Y.

"Reindeer." Moccasins. Sawyer Boot & Shoe Co., Bangor, Me.

"Direxstra." Silk Piece Goods and Silk Mixed Piece Goods. Susquehanna Silk Mills, New York.

"Prema." Silk Piece Goods and Silk Mixed Piece Goods. Susquehanna Silk Mills, New York.

"Picquette." Rep Cotton Fabrics. S. Guggenheimer, Rosenbert & Co., New York.

"The Gudekind." Coats, Vests, Trousers, etc. Shearer Bros. & Franklin, Lynchburg, Va.

"Scotch Wool Warranted Not to Shrink." Merino Underwear. The Medlicott Co., Windsor Locks, Conn.

"Red-man Brand." Shirts, Collars, Cuffs Made of Textile Material. Earl & Wilson, Troy, N. Y.

"Wide Awake." Negligee Shirts. Fannie C. Clawson, Reading, Pa.

"King Cole." Hosiery. A. B. Andrews Co., New York.

"Challenge." Handkerchiefs. The International Mfg. Co., New York.

"Pioneer." Handkerchiefs. The International Mfg. Co., New York.

"Big Stick." Bleached cotton goods by the piece. Deering, Milliken Co., New York.

"Armor Plate Hosiery." Des Moines Hosiery Mills, Des Moines, Ia.

"Gotham." Men's undershirts, drawers, etc. Tim & Co., New York.

"Middlesex." Hosiery. Shaw Stocking Co., Lowell, Mass.

"Trewan." Wilton rugs. Thomas Develon, Jr., Philadelphia, Pa.

"Satin Pompadour." Satin Ribbons. L. & E. Stirn, New York.

"Combed Derby Ribbed." Knitted Ribbed Underwear. Union Knitting Co., St. Johnsville, N. Y.

C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

COTTON WOOLEN WORSTED MACHINERY

Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN

SUSPENDED ON LINKS. REQUIRING NO EXPENSIVE FOUNDATIONS

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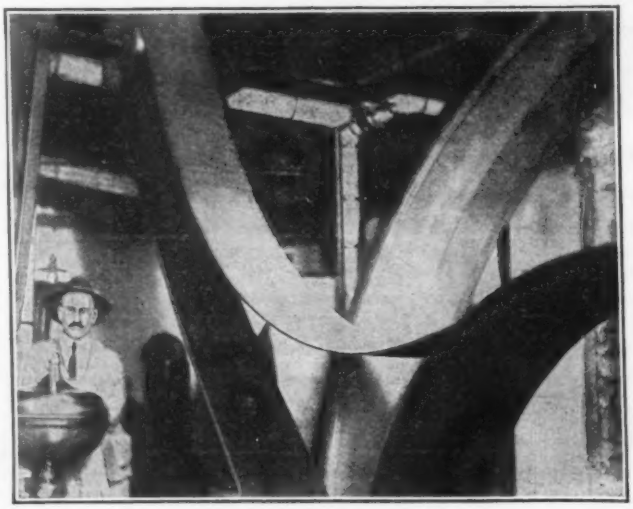
Machines Kept in Stock in Boston



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Cling-Surface treatment of belts makes and keeps them pliable, waterproof and preserved. They never dry out nor crack. Cling-Surface is not sticky, but penetrates all through the belt, where needed most, and makes the belt face like calf skin. Slipping is prevented, and every belt can be run slack and carry full loads with ease at all points.

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For Sizing Finest Fabrics

No matter what high grade cotton, wool or silk fabrics you are manufacturing, you cannot afford to overlook the value in your size mixture of

Gum Tragasol

If your size is made up with Gum Tragasol it will be always sweet and can be used whenever wanted.

D. & M. products eliminate bleaching, tinting, softening and finishing troubles.

Danker & Marston,

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Buyers' Index

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Advertising Agents.
Chesnutt, Nelson A., & Co.

Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.
Buffalo Forge Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Parks, G. M., Co.

Architects and Mill Engineers.
Ferguson, John W.
Cramer, Stuart W.

Asbestos.
Norristown Magnesia & Asbestos Co.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

Bale Ties.
Acme Steel Goods Co.
DeHaven Manufacturing Co.

Baling Presses.
Philadelphia Drying Mchy. Co.
Minnich Machine Works.
Sullivan Machinery Co.

Bandings.
——See under Yarns.

Baskets.
Lane, W. T., & Bro.

Bearing Metals.
Dodge Mfg. Co.

Belting.
Burnham, E. E., Co.
Candy Belting Co.
Rhoads, J. E., & Sons.
Shultz Belting Co.
——See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jas., Crucible Co.
Shultz Belting Co.
Stephenson Mfg. Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Danker & Marston.
Roessler & Hasslacher Chemical Co.

Blowers and Blower Systems.
American Blower Co.
Buffalo Forge Co.
Dean Bros. Steam Pump Works.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Leigh, Evan A.
Lestershire Spool & Bobbin Co.
Tebbets, E. L., & Co.
Wilson & Co.

Bobbin Winders.
Universal Winding Co.

Boiler Inspection and Insurance.
——See Steam Boiler Insurance.

Boilers.
——See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Box Strapping.
Acme Steel Goods Co.
De Haven Mfg. Co.

Braiding Machinery.
Mason Mfg. Co.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brass Hinges.
Root, C. J., Co.

Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Taunton-New Bedford Copper Co.
Textile Finishing Mchy. Co.
——See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.

Caps.
Calder Machine Works.

Carbonizing Machinery.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Tolhurst Machine Works.

Card Clothing.
Ashworth Bros.
Howard Bros. Mfg. Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Carded Cotton.
Blaisdell, S., Jr., Company.

Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Stoddard, Haserick, Richards & Co.

Carders' Tools.
Brown, Wm. H., Co.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.

Castings.
Farrel Foundry and Machine Co.
Schofield, Wm., Co.

Cell Driers.
Cell Drier Machine Co.

Cement Pans.
Scaife, W. B., & Sons.

Chains (Detachable, Silent and Roller).
Link Belt Co.

Chemicals.
Harding & Fancourt.
Roessler & Hasslacher Chemical Co

Chemists.
Little, Arthur D.

Cling Surface.
Cling Surface Mfg. Co.

Clocks.
Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Frontier Supply Co.
Pearson, J. T.
Richardson Brothers.

Cloth Cutting Machinery.
Cameron Machine Co.

Cloth Expanders.
American Finishing Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Leyland, Thomas, & Co.
Textile Finishing Machinery Co.

Clutches.
American Tool & Machine Co.
Dodge Mfg. Co.
Hunter, James, Machine Co.

Combs (Wool and Cotton).
Hood, R. H., Company.
Jefferson, Edward & Brother.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Stewart & Sons.
Stoddard, Haserick, Richards & Co.

Concrete Work and Construction.
Gilbreth, Frank B.

Condensers.
Dean Bros. Steam Pump Works.

Conditioning of Textile Fabrics.
New York Silk Conditioning Works.

Conveying Systems.
Buffalo Forge Co.
Dodge Mfg. Co.
Sturtevant, B. F., Co.

Cooper Hewitt Lamps.
Cooper Hewitt Electric Co.

Cop Spindles.
American Textile Specialty Mchy. Co.

Cop Tubes.
American Textile Specialty Mchy. Co.
——See Paper Tubes.

Copper Print Rollers.
Taunton-New Bedford Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.

Copper Work for Dyers.
Butterworth, H. W., & Sons Co.
Textile Finishing Machinery Co.
Tolar & Hart.

Alphabetical Advertising Index, with page numbers, follows this list.

Cork Inserts.
National Brake & Clutch Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Stoddard, Haserick, Richards Co.

Cotton Machinery.
Altemus, Jacob K.
American Textile Appliances Co.
American Textile Specialty Mchy. Co.
Ashworth Bros.
Brockway & Meckenstrum.
Butterworth, H. W., & Sons Co.
Cramer, Stuart W.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
McKerrow, H. G., Co., Ltd.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford Co., The.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Textile Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Cotton Softeners.
Bosson & Lane.
Burckhardt & Co.
Danker & Marston.
Harding & Fancourt.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.
Schofield, Edwin F.

Counting Machines.
Durbrow & Hearne Mfg. Co.
Root, C. J., & Co.

Crayons.
Dixon, Jos., Crucible Co.
Howe Mill Crayon Co.
Lowell Crayon Co.

Cutting Machines.
Adams, A. L.
Cameron Machine Co.
Durbrow & Hearne Mfg. Co.
Oswego Machine Works.

Cylinder Oil (Superheated Steam).
Power Specialty Co.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Kilburn, Lincoln & Co.
Stafford Co., The.

Dobby Chain.
Nuttall, George.

Draughtsmen.
Cameron Machine Co.

Drawing Rolls.
Jefferson, Edward & Brother.
Hood, R. H., Company.
Metallic Drawing Roll Co., The.

Drying Machinery.
American Blower Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Hunter, Jas., Machine Co.
Jefferson, Edward & Brother.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Drying Boards.
Bull, William C.
Pearson, J. T.
Philadelphia Drying Mchy. Co.

Dusters.
—See Wool and Waste Dusters.

Dust Collectors.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Davis & Quick.
Firth & Foster Co.
Germania Dye Works.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorimer's, The Wm. H., & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Rowland, Samuel.
Solway Dyeing & Textile Co.
Utica Willowvale Bleaching Co.
Western Thread & Dye Works.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co.
American Laundry Mchy. Mfg. Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schwartz, L. H. A., & Co.
Schuchardt & Schutte.
Smith, Drum & Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Vacuum Dyeing Machine Co.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dye Tubs.
—See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Badische Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Chemische Aniline Works.
Danker & Marston.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.

Dynamos.
—See Electric Lighting.

Edgings.
—See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electrical Heating Devices.
Crocker-Wheeler Co.

Electric Driven Pumps.
Dean Bros. Steam Pump Works.

Electric Fans.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Crocker-Wheeler Co.

Electric Lighting.
American Blower Co.
Buffalo Forge Co.
Cooper Hewitt Electric Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
—See Motors (Electric).

Elevators.
Salem Elevator Works.

Embossing Machines.
Cameron Machine Co.

Employees' Time Recorders.
Pettes & Randall Co.

Engine Repairs.
Fishkill Landing Machine Co.

Exhaust Heads.
Buffalo Forge Co.
Sturtevant, B. F., Co.
Power Specialty Co.

Fans—Exhaust and Ventilating.
—See Ventilating Apparatus.

Feed Water Heaters.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

Feed Water Purifiers.
Dodge Mfg. Co.
Scaife, W. B., & Sons.

Feeds.
—See Automatic Feeds.

Feed Water Regulators.
Berry Engineering Co.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.

Filters.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

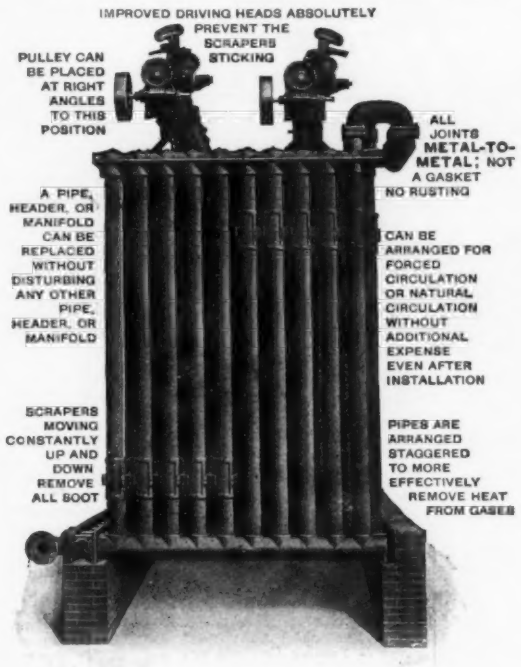
Finishing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Alphabetical Advertising Index, with page numbers, follows this list.

Our Engineers will explain in detail the

Sturtevant Economizer

and help you plan the best installation for utilizing the heat now escaping from your stack.


IMPROVED DRIVING HEADS ABSOLUTELY PREVENT THE SCRAPERS STICKING
PULLEY CAN BE PLACED AT RIGHT ANGLES TO THIS POSITION
ALL JOINTS METAL-TO-METAL; NOT A GASKET NO RUSTING
A PIPE, HEADER, OR MANIFOLD CAN BE REPLACED WITHOUT DISTURBING ANY OTHER PIPE, HEADER, OR MANIFOLD
CAN BE ARRANGED FOR FORCED CIRCULATION OR NATURAL CIRCULATION WITHOUT ADDITIONAL EXPENSE EVEN AFTER INSTALLATION
SCRAPERS MOVING CONSTANTLY UP AND DOWN REMOVE ALL SOOT
PIPES ARE ARRANGED STAGGERED TO MORE EFFECTIVELY REMOVE HEAT FROM GASES

Built for pressures up to 300 pounds per square inch.

Can be used with a chimney or with STURTEVANT MECHANICAL DRAFT Apparatus.

B. F. Sturtevant Co., Boston, Mass.

General Office and Works, Hyde Park, Mass.

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Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fan Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Steam Turbines; Pneumatic Separators, Fuel Economizers, Forges, Exhaust Heads, Steam Traps, etc. 701

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.

Fluted Rolls.
Hood, R. H., Company.
Leigh, Evan A.
Jefferson, Edward & Brother.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Calder Machine Works.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Textile Machinery Co.

Fly Wheels.
Dodge Mfg. Co.

Forges.
Sturtevant, B. F., Co.

Friction Chains.
Oneida Community, Ltd.

Friction Clutches.
—See Clutches.

Friction Cones.
Evans, G. Frank.

Friction Rings (Cork Insert).
National Brake & Clutch Co.

Fuel Economizers.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Hunter, James, Machine Co.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
American Blower Co.
Sturtevant, B. F., Co.

Gas Engines.
Olney & Warrin.

Gaskets (Superheated Steam).
Power Specialty Co.

Gassing Machines.
Stubbs, Joseph.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Dodge Mfg. Co.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrel Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
N. Y. & N. J. Lubricant Co.

Heating.
—See Ventilating Apparatus.

Heddles.
Howard Bros. Mfg. Co.
Stoddard, Haserick, Richards & Co.

Hoisting Apparatus.
Economy Engineering Co.

Hosiery Boards.
Pearson, J. T.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Parks, G. M., Co.

Hydraulic Rams.
Power Specialty Co.
Walworth Mfg. Co.

Hydro Extractors.
American Laundry Mchy. Mfg. Co.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Dienelt & Eisenhardt, Inc.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits.)
Home Insurance Co.

Investments.
Cross Creek Coal Co.

Ironing Machines for Knit Goods.
American Laundry Machinery Mfg. Co.
Consolidated H. S. & L. M. Company.

Jacquards.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines Crochet, Etc.
American Laundry Machinery Mfg. Co.
Consolidated H. S. & L. M. Company.
Merrow Machine Co., The.
Nye & Tredick Co.
Robinhold Machine Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Dubied, Edouard, & Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Huettig, Hugo.
Jenckes, E., Mfg. Co.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros. Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Lamb Knitting Machine Mfg. Co.
Keystone Latch Needle Co.
Mayo Knitting Machine & Needle Co.
Wardwell Needle Co.

Lamps, Electric.
Cooper Hewitt Electric Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Loom Pickers.
Barlow, John W., Co.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Stafford Co., The.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Beattie Machine Works.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricants.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.
Olney & Warrin.

Lubricators.
Detroit Lubricator Co.
Walworth Mfg. Co.

Lumpers.
Gerry, George, & Son.
Schofield, Wm., Co.

Machine Designers.
Adams, A. L.
Cameron Machine Co.

Machine Tools.
Am. Tool Works Co.

Machinery Dealers.
Jefferson, Ed., & Bro.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Taylor, James.

Machinists.
Adams, A. L.
Calder Machine Works.
Cameron Machine Co.

Machinists' Tools.
Whiton, The D. E., Co.

Mails.
Walder, J.

Magnesia.
Norristown Magnesia & Asbestos Co.

Manufacturing Locations.
Raleigh Chamber of Commerce.

Marking Pots.
Bradley, A. J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.

Mechanical Draft.
American Blower Co.
Buffalo Forge Co.

Mechanical Draughtsmen.
Sturtevant, B. F., Co.
Cameron Machine Co.

Mechanical Engineers.
American Blower Co.
Buffalo Forge Co.

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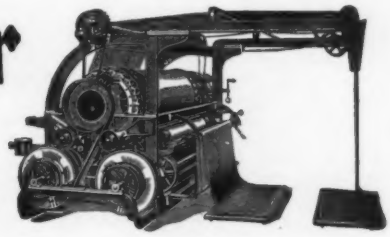
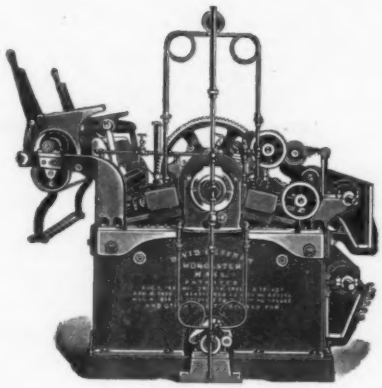
David Gessner

Worcester, Mass.

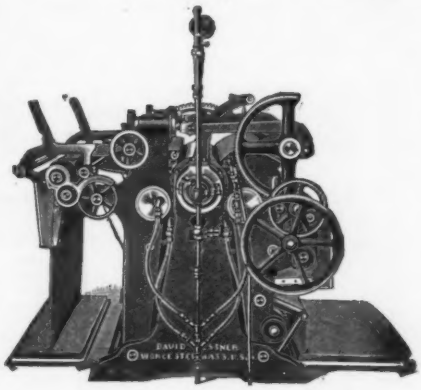




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Pneumatic Extractor No. 12
Polishing & Grinding Machine No. 13
Lacquering & Lustreing Machine No. 28
Brushing Machine No. 32

BERLIN, LONDON, SHANGHAI, VIENNA, STOCKHOLM, ST. PETERSBURG, COPENHAGEN

Schuchardt & Schutte

136 Liberty St., New York

Latest and Best

Wet and Dry Decatizing Machine No. 19

Automatic Platen Press No. R
Stenciling Machine No. E
Astrachanizing Machine No. 35 A
Examination Tables Nos. 1, 2 & 3

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Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
Murphy Iron Works.

Mercerizers.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorimer, Wm. H., Sons Co.

Mercerizing Machinery.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
—See Architects and Mill Engineers.

Mill Builders and Engineers.
Gilbreth, Frank B.
Ferguson, John W.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Buckley's, Benjamin, Sons.
Burnham, E. E., & Co.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Jefferson, Ed., & Bro.
Lane, W. T., & Bro.
Leigh, Evan A.
Murphy, E. W., & Co.
N. Y. & N. J. Lubricant Co.
Olney & Warrin.
Philadelphia Drying Machinery Co.
Pratt, R. C.
Riley, C. E., Company.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Vandegrift, Elias T.
Walworth Manufacturing Co.

Motors (Electric).
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Napping Machinery.
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Gessner, David.
Leigh, Evan A.

Nolls (Silk).
Malcolm Mills Co.
Ryle, Wm., & Co.

Non-Fluid Oils.
N. Y. & N. J. Lubricant Co.

Numbering Machines.
Durbrow & Hearne Mfg. Co.

Oil Cups.
Walworth Manufacturing Co.

Oils.
Borne, Scrymser Co.
Eurckhardt & Co.
Harding & Fancourt.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.

Oil Stencil and Press Board Paper.
Bradley, A. J.

Overseaming Machines.
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.

Packings (Metallic).
Power Specialty Co.

Paints (Wood Preserving).
Carbolineum Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

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Crosby & Gregory.
Howson & Howson.
Industrial Law League Inc.
Pearson, Gardner.

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Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pinking Machines.
Durbrow & Hearne Mfg. Co.
Oswego Machine Works.

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Scaife, W. B., & Sons.
Walworth Manufacturing Co.

Pneumatic Conveying.
—See Ventilating.

Portable Hoists.
Economy Engineering Co.

Power Transmission Machinery.
Almond, T. W., Mfg. Co.
American Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Cresson, Geo. V., Company.
Dodge Mfg. Co.
Evans, G. Frank.
Farrel Foundry and Machine Co.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Link Belt Co.
Olney & Warrin.
Oneida Steel Pulley Co.
Philadelphia Drying Machinery Co.
Plymouth Cordage Co.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Saco & Pettee Machine Shops.

Presses.
Automatic Machine Works.
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Minnich Machine Works.
Phila. Drying Machinery Co.
Spence & Rideout.
Sullivan Machinery Co.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.

Press Boards.
Case Bros., Inc.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Pulley Covering.
Olsen, Chas. E. A.
Warren Company.

Pulleys.
—See Power Transmission Machinery.

Pumps.
Buffalo Steam Pump Co.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Pump Governors.
Crosby Steam Gage & Valve Co.
Dean Bros. Steam Pump Works.
Walworth Mfg. Co.

Purifying & Filtration Plants.
Dodge Mfg. Co.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Quillers.
Foster Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Ramie Tops and Nolls.
Tierney, Frank A.

Raveling Machines.
American Raveler Co.

Raw Hide Gears.
New Process Raw Hide Co.

Reed and Harness Manufacturers.
American Supply Co.
Nuttall, George.
Stewart & Sons.
Walder, J.

Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Ribbon Cutters.
Cameron Machine Co.

Ribbons.
Cheney Bros.

Ring Travelers.
DeHaven Mfg. Co.
Shaw, Victor, Ring Traveler Co.

Roofing.
Barrett Mfg. Co.
Standard Paint Co.

Roller Leather.
Jefferson, Edward & Brother.

Roll Coverers.
Burnham, E. E., & Co.

Rolls (Rubber Covered).
American Wringer Co.

Rope.
American Mfg. Co.
Dodge Mfg. Co.
Plymouth Cordage Co.

Rope Transmission.
American Mfg. Co.
Cresson, Geo. V., Company.
Dodge Mfg. Co.
Plymouth Cordage Co.

Roving Cans.
Hill, James, Mfg. Co.
Standard Fibre Co.

Ruberoid Roofing.
Standard Paint Co.

Sash Cord Braiders.
Mason Mfg. Co.

Scallop Machines.
Merrow Machine Co.

Schools.
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International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Scleroscope for Metal Testing.
Shore Instrument & Mfg. Co.

Secondhand Machinery.
—See Mchry. Dealers, also classified Ads.

Separators (Yarn).
Draper Co., The.

Sewing Machines and Supplies.
American Raveler Co.

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The one dependable roofing for buildings devoted to textile manufacture.

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Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Standard Sewing Machine Co.
Textile Finishing Machinery Co.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Shafting, Hangers, Etc.
—See Power Transmission Machinery.

Shearing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Work.
Scaife, W. B., & Sons.

Shell Rolls.
Thurston, A. G., & Son.

Shoddies.
—See Wool Shoddies.

Shuttles.
—See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Leigh, Evan A.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.

Silk Mill Supplies.
Hall, I. A., & Co.

Silk Noils.
Fawcett, Hughes.

Singe Plates.
Butterworth, H. W., Sons Co.
Taunton, New Bedford Copper Co.
Textile Finishing Machinery Co.

Singeing Machines.
Automatic Machine Works.
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Smith, Drum & Co.
Stubbs, Joseph.
Textile Finishing Machinery Co.

Sizing, Starch and Gums.
American Diamalt Co.
Arabol Mfg. Co.
Corn Products Refining Co.
Danker & Marston.
New Brunswick Chemical Co.
Stein, Hirsch & Co.
Vera Chemical Co.

Skylights.
Drouve, G., Co.
Van Noorden, E., Co.

Slashers.
Leigh, Evan A.
Lowell Machine Shop.
Riley, C. E., Company.

Soaps.
Dobbins Soap Mfg. Co.
Zurn, O. F., Co.

Spindles.
Bamford & Smith.
Bodden, Wm. & Son, Ltd.
Buckley's, Benjamin, Sons.
Calder Machine Works.
Draper Company.
Easton-Burnham Co.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Vandegrift, Elias T.

Spindle Tubes.
Bamford & Smith.
Calder Machine Works.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Vandegrift, Elias T.

Spinning Rings.
Draper Company.
Howard & Bullough American Machine Co.
Whitinsville Spinning Ring Co.

Spinning Tubes.
Buckley's, Benjamin, Sons.
Jefferson, Edward & Brother.

Spools.
—See Bobbins, Spools, Shuttles, Etc.

Spoolers.
Draper Company.
Easton & Burnham Machine Co.
Lindsay, Hyde & Co.
Lowell Machine Shop.
Payne, George W., & Co.

Stacks.
Scaife, W. B., & Sons.

Steam Boilers.
Scaife, W. B., & Sons.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co.

Steam Engines.
American Blower Co.
Buffalo Forge Co.
Fishkill Landing Machine Co.
Olney & Warrin.
Providence Engineering Works.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Steam Heating.
American Blower Co.

Steam Jacket Kettles.
Badger, E. B., & Sons Co.

Steam Pipe and Boiler Covering.
Norristown Magnesia & Asbestos Co.

Steam Pumps.
Dean Bros. Steam Pump Works.
Goulds Manufacturing Co., The.
Olney & Warrin.
Walworth Mfg. Co.

Steam Specialties.
Berry Engineering Co.
Buffalo Forge Co.

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Butterworth, H. W., Sons Co.
Crosby Steam Gage & Valve Co.
Sargent's Sons, C. G., Corp.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Walworth Manufacturing Co.

Steam Traps.
American Blower Co.
Buffalo Forge Co.
Sturtevant, B. F., Co.
Walworth Mfg. Co.

Steel Frame Construction.
Scaife, W. B., & Sons.

Stencil Machines.
Bradley, A. J.

Stop Motion for Knitting Machines.
Boss Knitting Machine Works.

Stop Motion for Looms.
—See Warp Stop Motions.

Superheaters, Foster.
Power Specialty Co.

Tanks, Tubs and Vats.
Cypress Lumber Co.
Hall, Ames H., Son & Co.
Hopkins Machine Works.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Scaife, W. B., & Sons.
Stearns, A. T., Lumber Co.
Woolford, G., Tank Mfg. Co.

Tapes, Braids and Edgings.
Beacon Narrow Fabric Co.
Chapin, George W.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Maurer, F. W., & Sons Co.
Welmar Bros.
Wick Narrow Fabric Co.

Telephones.
Pettes & Randall Co.

Temples.
Draper Co.

Textile Schools.
—See Schools.

Thread Guide (Adjustable).
Palmer, L. E., Co.

Tiering Machines.
Economy Engineering Co.

Top Cutting Machines.
Robinhold Machine Co.
Wildman Mfg. Co.

Trimming Machines.
American Raveler Co.

Trade Mark Stamps.
Kaumagraph Co.

Trucking.
Export Trucking Co.

Trucks.
Bailey, Frank.

Turbines.
—See Water Wheels.

Twine.
American Mfg. Co.
Plymouth Cordage Co.
Richardson Bros.

Twisting Machinery.
Jefferson, Edward & Brother.
Lowell Machine Shop.
Smith & Furbush Machine Co.

Valves.
Crosby Steam Gage & Valve Co.
Jolly, J. & W.
Walworth Mfg. Co.

Variable Speed Transmission.
Cell Drier Machine Co.
Reeves Pulley Co.

Ventilating Apparatus.
American Blower Co.
American Moistening Co.
Berry, A. Hun.
Buffalo Forge Co.
Carrier Air Conditioning Co. of America.
Crocker-Wheeler Co.
Drouve, G., Co.
Parks, G. M., Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Tolhurst Machine Works.
Sargent's, C. G., Sons.
Schnitzler, Chas. H.
Sturtevant, B. F., Co.
Walworth Mfg. Co.

Warp Compressors.
Worcester Warp Compressing Machine Co.

Warpers.
Draper Company.
Entwistle, T. C., Co.
Lowell Machine Shop.

Warping and Beaming Machinery.
Altemus, J. K.
Draper Company.
Entwistle, T. C., Co.
Smith & Furbush Machine Co.

Warp Stop Motions.
American Textile Appliances Co.
Draper Company.
Kip-Armstrong Co.

Washers (Cloth).
American Laundry Mchy. Mfg. Co.
Arlington Mch. Works (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Works.
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Washing Soda.
Ford, J. B., Co.

Watchman's Clocks.
Holtzer-Cabot Electric Co.
Nans, T., Clock Co.
Pettes & Randall Co.

Water Chemists.
Scaife, W. B., & Sons Co.

Water Purifiers and Filters.
Dodge Mfg. Co.

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Water Softeners.
Dodge Mfg. Co.
Ford, J. B., Co.
Hungerford & Terry.
Scaife, W. B., & Sons Co.

Water Towers.
Tippett & Wood.

Water Wheel Governors.
Woodward Governor Co.

Water Wheel Harness.
Dodge Mfg. Co.

Water Wheels.
Jolly, J. & W.
Risdon-Alcott Turbine Co.
Smith, S. Morgan, Co.

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For a position of responsibility with a cotton machinery building firm. A technical education and practical experience in a cotton mill a requisite. Address giving full particulars, "E.C.W.," care Lord & Nagle Co., 144 Congress St., Boston.

Wanted, a knitter, with some means

To acquire an interest in, and manage a small hosiery plant in the West. Address "West," care Textile World Record, Boston, Mass.

A High Class and Efficient

Office and Mill Manager

Desires to connect himself with a high-class concern. Eighteen years' experience in resourceful and astute business management in knit goods manufacture. Nine years' as proprietor. Address P. O. Box No. 136, Norfolk, Va.

Wanted

Thoroughly Competent Spinner

In large Worsted Mill making medium yarns. Address "M. Y.," care Textile World Record, Boston, Mass.

Wanted An Experienced Superintendent

For finishing room who is capable of making underwear of high quality for the retail trade. A good position to the right man. Reply by letter giving references and stating experience.

DUOFOLD HEALTH UNDERWEAR CO.
Frankfort, N. Y

Wanted in large manufacturing plant.

SUPERINTENDENT of ASSEMBLING DEPT. Not only a thorough machinist, but a judge of all kinds of machine work, with experience in manufacturing practice and capable of reorganizing a department. The kind of man wanted is one of skill and character now holding a good position, but disirous of advancement. Correspondence confidential. Address SKILL, care TEXTILE WORLD RECORD, BOSTON, MASS.

Open for Engagement.

Manager, Supt. worsted men's wear and dress goods. Thoroughly experienced, A1 refereuces. Will invest $2,000 to $3,000. Correspondence confidential Address "Invest," care Textile World Record, Boston, Mass.

Your dreams

can be realized.

Dreams are slumbering **ambitions** waiting for **opportunity.**

Opportunity is a force, visible only to those who are **ready** to grasp it. Your **opportunity** is right in front of you—the firm is just waiting for you to **prove up.** They don't care **who** you are—its **what** you are.

TEXTILE WORKERS

PREPARE YOURSELF FOR THIS ADVANCE. The American School of Correspondence will help you. This School has helped thousands to a better and brighter future; to qualify for positions with shorter hours, easier and cleaner work and larger pay. Our courses in Complete Cotton, Complete Knitting, Textile Design, Textile Chemistry and Dyeing, Warp preparation and Weaving, and Cotton Spinning are exceptionally complete and practical—just what you need. We give the most comprehensive instruction in the usual work and lay particular stress on the course in **Woolen** and **Worsted Manufacturing.**

Our **"Home Study"** course is just what **you** need to occupy your time during the long winter evenings. Bright, pleasant, interesting studies, that will rest you after a hard day's work. The lessons are never long enough to tire. They are written by practical, technical men.

Pick out the course that suits your taste and present employment – put your "X" before it today with a determination to make every spare moment **count** until your DREAMS ARE REALIZED.

We help men help themselves.

American School of Correspondence

CHICAGO, U. S. A.

FREE INFORMATION COUPON

Fill in and mail today.

American School of Correspondence:

Please send your illustrated Textile Bulletin and advise me how I can qualify for the position marked "X."

. Woolen and Worsted Supt.	..Boss Weaver
..Woolen and Worsted Designer.	..Cotton Yarn Supt.
	..Cotton Designer.
..Boss Cotton Spinner.	..Boss Finisher.
..Boss Dyer	..Boss Cotton Carder.
..U S. Inspector.	..Knitting Mill Supt.
..Boss Woolen and Worsted Carder.	..Cloth Examiner.
	..Boss Knitter.
..Boss Woolen and Worsted Spinner.	..Buyer.

NAME .....

ADDRESS .....

OCCUPATION .....

Textile World Record 11-08.

Situations Wanted.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufactu ers who may be in need of such men may address them in care of Textile World Record, Boston, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, gives special attention to this department. He would be pleased to hear from any of his friends who may be interested. Address Textile World Record, 144 Congress St., Boston, Mass.

COTTON SUPERINTENDENTS.

Superintendent of a cotton mill; worked on plain cotton goods, automobile tire ducks, also yarns; familiar with all kinds of American and English makes of machinery; good reference; 47 years of age, married. 4179, Textile World Record, Boston, Mass.

Superintendent of a Cotton Mill or overseer of carding in a large mill. Worked on yarns of all kinds, combed and carded. Understands all makes of machinery. 29 years of age, married. Good reference. 4675, Textile World Record, Boston, Mass.

Superintendent or Manager of a cotton mill; worked on sheetings and drills, but can handle most anything; familiar with Lowell Machine Shop, Saco & Pettee and Kitson makes of machinery; will not go West or Canada; prefers New England; 53 years of age, married; good reference. 4187, Textile World Record, Boston, Mass.

Superintendent of Cotton Yarn or weaving mill; might consider a position as overseer of ring spinning, spooling, warping or slashing in large mill on stripes, checks, tickings, sheetings and lawns; all kinds of machinery; good reference; 35 years of age, married. 4696, Textile World Record, Boston, Mass.

Superintendent of cotton or woolen yarn mill or shoddy plant; position wanted by a man 50 years of age, who has had a wide experience in the manufacture of yarns; understands all makes of cotton and woolen machinery, also held position as superintendent in large knitting mills, and is familiar with the American makes of knitting machines; first class recommendations. 3249, Textile World Record, Boston, Mass.

Assistant Superintendent or overseer of dressing; position wanted by a man 30 years of age, married and American; has worked on fancy cotton woolens and worsteds, and all kinds of high and low grade goods; is familiar with all kinds of woolen and cotton machinery; good references. 3537, Textile World Record, Boston, Mass.

Superintendent of an Underwear Mill or overseer of finishing in a large plant. Worked on ladies' underwear and novelty. Familiar with all makes of finishing machinery and expert on Merrow machines. Will not go West, South or Canada. 45 years of age, married. 4674, Textile World Record, Boston, Mass.

FOR SALE

ONE 40 SPINDLE FOSTER WINDER

6"inch traverse, 2 years old. Inquire of McCleary, Wallen & Crouse, Amsterdam, N. Y.

FOR RENT

BRICK BUILDING

Six Floors, 34 x 70 Feet. Well Lighted. In the center of city of 50,000 population. Cheap Labor. Suitable for manufacture of Hosiery or other knit goods. Lancaster has no factory of this kind. Apply to

PHILIP LEBZELTER & SON CO.,
Lancaster, Pa.

WOOLEN SUPERINTENDENTS.

Superintendent or Designer; worked on men's wear, ladies' dress goods, fancy vestings and piece dye worsteds; familiar with all makes of machinery; will go anywhere for a good position; 36 years of age, married; good reference. 4157, Textile World Record, Boston, Mass.

Agent or Superintendent of a worsted or woolen mill. 45 years of age. Worked on all kinds of woolen goods from cheviots to fine cassimeres, worsteds and cotton worsteds. Familiar with all makes of woolen mill machinery. Could take a position at once. Good reference. 4576, Textile World Record, Boston, Mass.

Superintendent of Worsted Yarn Mill, or overseer of drawing and spinning. Understands carding and combing hosiery yarns, camel hair, alpaca, botany crossbreds and fine weaving yarns, 30 years of age, good reference. 4697 Textile World Record, Boston, Mass.

CARDERS.

Overseer of Woolen Carding, or good second hand position; worked on all classes of goods; familiar with American, Davis & Furber and Lombard makes of machinery; will not go to Pennsylvania or South, but prefers New England; good reference; 54 years of age, married. 4191, Textile World Record, Boston, Mass.

Second Hand of Carding; worked on fine to coarse work; familiar with the Lowell fly frame, Providence and many other machines; 35 years of age, single; good reference; will not go West or South. 4183, Textile World Record, Boston, Mass.

Overseer of Cotton Carding; worked on coarse and fine yarns, print cloth and dress goods; familiar with Howard & Bullough, Providence, Woonsocket, Saco & Pettee, Mason & Whitin makes of machinery; 35 years of age, married; good reference. 4186, Textile World Record, Boston, Mass.

Representative Wanted

An important knitting machinery concern in Germany requires an energetic man of proven ability as agent for the United States Specialty: Double Ribb machines and Spring Needle looms. State experience if any, and commission wanted; give reference. Address "B. K. A.," Textile World, Record, Boston, Mass.

FOR SALE

A PRIME LOCATION

For a cotton factory near Atlanta on good stream of water. Convenient to railroad transportation. Address Textile P. P. Box 353, Atlanta, Ga.

To Textile Machine Builders

Messrs. Hacking & Co., Limited, Bury, Lancashire, are open to negotiate with firm of Textile Machinists with a view to the manufacture on licence or otherwise of their U. S. Patent No. 813,552 dated Feb. 27th, 1906, patent Folding Machine. Over 800 of the machines have been made since 1905. Please communicate direct.

KNITTERS.

Hosiery Mill Superintendent or boss dyer for large mill, running on aniline blacks and colors; worked on boys', misses' and children's, 1 and 1 and 2 and 1 ribbed hose, ladies' hose and men's half hose from 108 to 200 needle; familiar with all makes of machinery; 37 years of age, married; good reference. 4190, Textile World Record, Boston, Mass.

Superintendent of a Knitting Mill or would accept position as boss finisher; worked on flat, ribbed, fleece lined from yarn to finished garment, balbriggans, sweaters and full fashioned; familiar with all classes of machinery to make above goods; 31 years of age, American, married; good reference. 4192, Textile World Record, Boston, Mass.

Overseer of Knitting. Worked on fleece lined, flat or ribbed goods on Scott & Williams, Pepper, Brinton latch needle and Tompkins Bros., Campbell & Clute and Gormley Bros. spring needle machines; good reference, 35 years of age, married. 4114 Textile World Record, Boston, Mass.

Overseer of Knitting in a small mill or second hand in a large mill. 22 years of age, single. Worked on balbriggans, single and double, and fleece lined. Familiar with Tompkins, Campbell & Clute and Payne winders. Could take a position at short notice. Good reference. 4539, Textile World Record, Boston, Mass.

Superintendent of a knitting mill, or assistant in large mill; worked on men's and women's ribbed goods and men's flat goods; familiar with all kinds of sewing machines used in knitting mills and clothing factories; Scott & Williams, Wildman, Nye & Tredick, Crane, Esty and Branson knitting machines; 30 years of age, married; will not go to R. I. or N. J.; good reference. 4185, Textile World Record, Boston, Mass.

Superintendent or overseer of knitting; worked on everything from silk to plush; specialty is single thread and plated or wool work; familiar with all makes of both flat and circular machines; 44 years of age, married; good reference. 4181, Textile World Record, Boston, Mass.

Superintendent, boss knitter or fixer; worked on all classes of ladies', misses', half hose; plain, fancy and lace from 84 to 220 needle; cotton, wool, lisle, worsted, mercerized, silk and merino; familiar with Scott & Williams, Jenks, Standard, Mayo, Branson, Hemphill, Boss, Brinton, Hepworth & Beattie loopers; Murphy, International, Union Special, seamers and edgers; National and Lamb sewing machines; 30 years of age, single; good reference. 4153, Textile World Record, Boston, Mass.

Superintendent or boss knitter in large mill; worked on worsted, wool, shoddy, plaited, cotton, lisle, mercerized and silk goods; familiar with Acme, Standard, Victor, Scott & Williams, and several other makes of machinery; also standard ribbers, loopers and sewing machines; 35 years of age, married; good reference. 4168, Textile World Record, Boston, Mass.

Overseer of Latch Needle Knitting; position wanted by a man 27 years of age, single; has worked on almost all grades of stitchers of ladies' and gents' cotton and worsted underwear; familiar with Scott & Williams, Wildman, Snyder, Nye & Tredick, Stafford & Holt and Fisher machines; can take a position at short notice; good references. 3873, Textile World Record, Boston, Mass.

Overseer of Knitting; position wanted by a man 29 years of age, married; worked on fleece lined, balbriggans, mercerized cotton, fancy worsted, wool merino nets, heavy and light weight ribbed work; familiar with Campbell & Clute, Tompkins Bros., Bromley & Crane, latch needle, Scott & Williams, Nye & Tredick, Fisher, and Wildman machines; good references. 3881, Textile World Record, Boston, Mass.

Superintendent or boss knitter; worked on men's fine balbriggan, ladies', men's and children's wool underwear; familiar with all kinds of knitting machinery; 27 years of age, American. 3259, Textile World Record, Boston, Mass.

Overseer of Knitting; 38 years of age; energetic and progressive; wants position on spring needle knitting machines; 22 years' experience on stockinets, elderdowns, jerseys, astrachans, fleeces, bathing suits, athletic garments, underwear etc.; superior on these lines; good reference; married. 4087, Textile World Record, Boston, Mass.

DESIGNERS.

Woolen or Worsted or woolen and worsted designer. Worked on medium to high grade woolens and medium grade worsteds; familiar with Crompton, Crompton & Thayer, and Knowles looms; 38 years of age, married; good reference; will not go West, South or Canada. 4156, Textile World Record, Boston, Mass.

Assistant Designer or shipping clerk in a cotton mill; has held no position in a mill; is a student of the International Correspondence Schools; took a complete cotton course, including designing, cotton mill work, machinery and mill engineering; will not go to Maine, New Hampshire, Vermont, West or Canada; 25 years of age. 4210, Textile World Record, Boston, Mass.

Assistant Designer; 27 years of age; worked on suitings, cassimeres, overcoatings, etc.; familiar with Knowles looms; wants a position in the N. E. States; good reference. 4536, Textile World Record, Boston, Mass.

Superintendent or Designer in a worsted or woolen mill. Worked on fine worsteds, crossbreds, piece dyes, serges, worsteds and woolen combination cloths, cross dyes, cotton worsted and wool and cotton mixes. Familiar with all makes of machinery. Good reference. 50 years of age, married. 4643, Textile World Record, Boston, Mass.

Superintendent and Designer or boss weaver in a woolen mill; 48 years of age, married, American; has had several years of experience on fancy cassimeres, kerseys, meltons and dress goods; could take a position at once. 4537, Textile World Record, Boston, Mass.

Superintendent or Designer in a Woolen Mill. Worked on all classes of worsted goods. Familiar with all makes of machinery. Good reference. 50 years of age, married. 4673, Textile World Record, Boston, Mass.

Overseer of Weaving Designer or Assistant. Worked on wool, worsted or cotton goods, ladies' dress goods, broadcloths, venetians, flannels, men's suitings; good reference, 44 years of age, married. 4106 Textile World Record, Boston, Mass.

New Bedford Textile School

Day and Evening Instruction in

Picking,
Carding,
Combing,
Spinning,
Warp Preparation,
Weaving,
Designing,
Knitting,
Chemistry and Dyeing.

CATALOGUE ON APPLICATION.

Address

New Bedford Textile School

New Bedford, Mass.

SPINNERS.

Any Position in Cotton, spinning or twisting department where there is a chance for advancement; has worked on low counts, 20s to 30s, and American cotton for sewing thread; familiar with all reading types of German and English cotton machinery, mule and ring frame; has also had instruction in steam and electrical engineerng; 21 years of age, single; will not go to Pennsylvania, New Jersey, West, South or Canada; good reference. 4165, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, spooling, warping, slashing, twisting, cone-winding, reeling, etc.; worked on all kinds of yarn; numbers ranging from 4s to 120s, Egyptian and American cotton, also colored work; familiar with all makes of American ring frames, twisters, beam or ball warpers. Broadbent's, Foster's, Payne's, Camless, the new Universal Cone Winders, Skein Spoolers, etc.; will not go to Vermont, Pennsylvania, New York, New Jersey, West, South or Canada; 32 years of age, married; has two second hands of ring spinning in family; good reference. 4171, Textile World Record, Boston, Mass.

Boss Dresser or second dresser in large mill; worked on all kinds of fancy woolens and cotton mixes; familiar with Davis & Furber makes of machinery; 35 years of age, married; will not go to Maine, Vermont, Pennsylvania, New York, New Jersey, West, South, or Canada; good reference. 4175, Textile World Record, Boston, Mass.

Overseer or Second Hand of twisting, reeling, doubling, etc.; worked on all kinds of threads; familiar with twisters, flyer and ring, butt braiders, all kinds of window spoolers and doublers; good reference; 30 years of age, married. 4182, Textile World Record, Boston, Mass.

WEAVERS.

Overseer of Weaving; worked on sheetings, denims, drillings, shirtings, table cloths, and a variety of cloth in ladies' dress goods in cotton, worsted, wool and silk; familiar with all makes of machinery; will not go to Pennsylvania, New Jersey, West, South or Canada; 31 years of age, married; good reference. 4209, Textile World Record, Boston, Mass.

A Young Man desires position in cotton weave room to become eventually an overseer; 28 years of age; has had a textile school education and is good at designing and calculating; will go anywhere for a position and can take a position immediately; German. 4164, Textile World Record, Boston, Mass.

Overseer of Weaving, second hand in the finishing department or cloth inspector. Worked on all classes of woolen goods and understands all makes of finishing machinery. Prefers N. E. States. 39 years of age, married. Good reference. 4655, Textile World Record, Boston, Mass.

Promotion for Textile Workers

The most practical, surest, and quickest way in the world for ambitious textile workers to secure promotion is offered by an institution through whose assistance thousands of men have already advanced to better positions and larger salaries. They have done this in their own homes, in their spare time, and at an insignificant cost. We will cheerfully explain, free of charge, how we can adapt our plan to **YOUR** personal needs and income if you will write us today, stating the position you would like to secure.

INTERNATIONAL CORRESPONDENCE SCHOOLS, Box 882, Scranton, Pa.

WEAVERS.

Overseer of Woolen, Worsted or Cotton Weaving. Worked on men's wear, ladies' dress goods, wool, silk or cotton; have been employed in one of the largest mills in N. E.; first class reference as to character and ability, 50 years of age, married. 4103 Textile World Record Boston, Mass.

Overseer of Woolen or Worsted Weaving. Worked on woolen dress goods, men's wear, cotton worsteds and fancy worsteds on Crompton & Knowles looms, good reference, 35 years of age, married. 4698 Textile World Record, Boston, Mass.

Overseer of Woolen Weaving. Worked on woolen dress goods, men's wear, worsted suitings, overcoatings, on Crompton & Knowles looms; 34 years of age, married, good reference. 4100 Textile World Record, Boston, Mass.

Overseer of Woolen or worsted weaving. Worked on worsteds, cotton worsteds, woolens and dress goods. Crompton & Knowles looms. Will not go West, South or Canada. Good reference. 46 years of age, married. 4642, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving on plain and fancy cotton goods, all kinds of looms. Will not go West, South or Canada; good reference, 43 years of age, married. 4111 Textile World Record, Boston, Mass.

MISCELLANEOUS

Overseer of Finishing; worked on piece dyes, fancy worsteds, ladies' dress goods, cassimeres, coverts, suitings and overcoatings; familiar with a very large variety of machinery; will not go to New Jersey, West, South or Canada; 45 years of age, married; good reference. 4162, Textile World Record, Boston, Mass.

Overseer of Finishing, or would accept a good boss burling or sewing position; worked on all kinds of woolen goods, high grade, plain and fancy worsteds, cotton worsteds, rain cloths, dress goods, etc.; familiar with all makes of finishing machinery; 30 years of age, married; good reference; will not go West, South or Canada. 4198, Textile World Record, Boston, Mass.

Position in Dry Goods commission house; has worked mostly on woolen and worsted dress goods, suitings and trouserings; familiar with Davis & Furber, Prince Smith & Son, drawing, spinning and twisting machinery; Lowell Machine Shop machinery, Noble comb, Crompton & Knowles, and Hall & Stella makes of machinery; will not go to Massachusetts, Rhode Island, Connecticut, New Jersey, South or Canada; 24 years of age, single; good reference. 4180, Textile World Record, Boston, Mass.

A High Class and efficient office and mill manager desires to connect himself with a high-class concern; 18 years' experience in resourceful and astute business management in knit goods manufacture; nine years as proprietor; 37 years of age, married. 4199, Textile World Record, Boston, Mass.

Mill Machinist on loom repairs or any kind of cotton machinery repairs; familiar with cotton machinery, Crompton & Knowles and Whitin looms; will not go to Rhode Island, New Hampshire, Vermont or Canada; 37 years of age, married; good reference. 4161, Textile World Record, Boston, Mass.

Loom Fixer; worked on cassimeres, cheviots, dress goods, blankets, flannels and shirtings; familiar with Knowles looms; good reference; 28 years of age, married. 4203, Textile World Record, Boston, Mass.

Overseer in Shoddy Mill; familiar with all kinds of the latest makes of shoddy machinery; 45 years of age, single; good reference. 4174, Textile World Record, Boston, Mass.

Bookkeeper, Office Manager, traveling salesman or assistant superintendent; worked in cotton and wool mill offices; 40 years of age, married; will not go West, South or Canada; good reference. 4207, Textile World Record, Boston, Mass.

DYERS.

Chemist and Dyer on fur hats, or salesman of dyestuff for reliable house; worked on all sorts of men's stiff and soft hats, all grades of ladies' felt hats, also bleached panama hats; familiar with such machines as are used in hat dyeing, mostly stock dyeing machines, and sizing in color machines; good reference; will not go to Pennsylvania, New York, New Jersey, West, South or Canada; 22 years of age, married. 4194, Textile World Record, Boston, Mass.

Overseer of Dyeing; worked on raw stock, worsted yarns, tops, piece dyes, cotton and shoddy; familiar with Klauder & Weldon makes of machinery; 27 years of age, single; good reference; will not go to New Hampshire, Vermont, Pennsylvania, West or Canada. 4196, Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on worsted yarns, piece dyes, raw stock and slubbing. Will not go West or South. Good reference. 41 years of age, married. 4630, Textile World Record, Boston, Mass.

Overseer of Dyeing or assistant superintendent of a woolen mill. Worked on dress goods, union cassimeres, thibets, overcoats, suitings, piece dyes, raw stock, cross dyes, fancy shoddies, a specialty. Prefers a position in the N. E. States. Good reference. 27 years of age, married. 4657, Textile World Record, Boston, Mass.

Second Hand in dye house. Position wanted by a young man 22 years of age. Graduate in chemistry and dyeing in textile school. Has had four years' experience in mills, two as second hand, two as overseer of dyeing. Worked on men's, ladies' worsted piece dyes, stock and worsted and cotton yarns. Good reference. 4546, Textile World Record, Boston, Mass.

Second Hand in Dye House. Worked on all classes of wool and worsteds. Is a graduate of chemistry. Would like to get a position where the overseer would give him a chance to show what he is worth. Good reference. 27 years of age. 4649, Textile World Record, Boston, Mass.

DYERS.

Overseer of Dyeing; worked on wool, cotton and union goods in all its branches; familiar with all makes of machinery; 32 years of age, married; will go anywhere for a good position; good reference. 4146, Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on piece dyes, wool, worsted and cotton yarns, wool, cotton raw stock. 35 years of age, married. Good reference. 4661, Textile World Record, Boston, Mass.

Color Mixer or Dyer; 53 years of age; has worked on carpet yarns mostly, also plushes, fur hats, etc.; first class recommendations from leading mills where last employed; could take a position at short notice. 4531, Textile World Record, Boston, Mass.

Overseer of Dyeing; position wanted by a man 43 years of age, married, Scotch; worked on cotton, wool and worsted dress goods, knitting yarns; good reference from mills in Scotland where he has been employed as manager of dye and finishing works. 3456, Textile World Record, Boston, Mass.

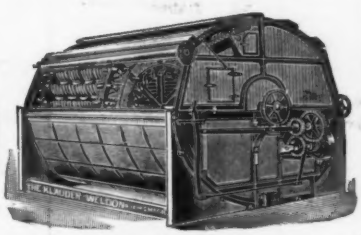
Overseer of Dyeing in a woolen mill, or dyeing and finishing in a felt mill; position wanted by a man 31 years of age, married; has worked on all kinds of cotton, wool, shoddy mixes, raw stock, yarns cotton and wool, piano felts, chest protectors and hot felts; good references; could take position at once; will go anywhere. 3911, Textile World Record, Boston, Mass.

Boss Dyer, scourer and bleacher in a knitting mill; worked on all grades of knitted underwear; first class references; will not go West or to Canada; 41 years old, married. 3004, Textile World Record, Boston, Mass.

Overseer of Dyeing; position wanted by a man 51 years of age, married, with A-1 references; worked on stock for traction and army goods, wood and bisulphate vats, natural and synthetical indigo, also stock for cassimeres, blankets, robes, shawls, cotton, wool, shoddy mixes, cotton warps, mercerized effects. 3692, Textile World Record, Boston, Mass.

RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK

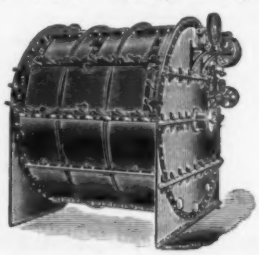


SKEIN AND SLUBBING MACHINE.

THE KLAUDER-WELDON DYEING MACHINE COMPANY

P. O. Box K, AMSTERDAM, N. Y.

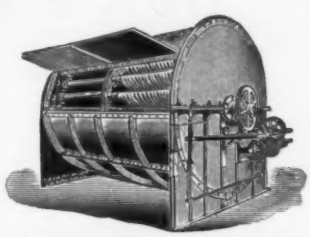
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

A Record of Successes

is the reward for our efforts in the wool scouring business.

Wyandotte Textile Soda

moves steadily onward and upward, constantly growing in popularity with the mill interests.

The results it produces are the reasons for it all—clean, snow white, lofty and fluffy wool. A wool fiber possessing all its natural properties, free from injury. Could you ask more?

Then, don't assume the risk which the harsh and severe alkalies cause. Wyandotte Textile Soda is sold by all supply houses. Order from them or write us for further information.

None Genuine except with card bearing this Trade Mark

In Every Package.

The J. B. Ford Co., Wyandotte, Mich.

Sole Manufacturers

THIS SODA HAS BEEN AWARDED THE HIGHEST PRIZE WHEREVER EXHIBITED.

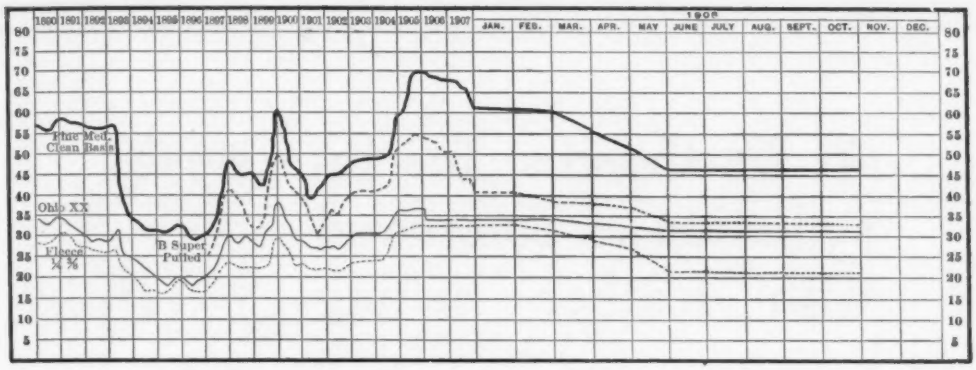


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

Trade in wool has been dull in anticipation of the election, the closing of accounts at the end of the year, the promised revision of the tariff, and the reduced demand for goods. Despite these adverse influences prices have remained practically unchanged. The stocks of wool in dealers' hands are not excessive and carrying them has been made easier this year by the policy that has left a good share of the burden resting on the growers and Western dealers. Now that the revision of the tariff by the friends of the protective system is assured the trade has experiecned a pronounced feeling of hopefulness. The tariff will be revised calmly and on business principles, with ample provision made for giving all trades an opportunity to adjust themselves to the new order of things.

Foreign wool markets are quiet, but a fair business is anticipated during the coming winter. Nevertheless, the depression in trade throughout the world is affecting the wool trade adversely, and there is a disposition abroad as well as at home to avoid making contracts for the future, and to confine transactions as far as possible to immediate requirements.

A Deserved Recognition.

The English Card Clothing Co., Ltd., of Huddersfield, England, through their chairman, John Sykes, have sent out the following notice: We have much pleasure in informing you that Richard Johnson has been elected a director of this company. Mr. Johnson will continue to represent the company abroad, and we hope that he will always receive the same confidence and support which has been so generously accorded him in the past."

Our congratulations both to the English Card Clothing Co., Ltd., and to Mr. Johnson, and both he and they can be well assured of "Dick's" welcome whenever he comes this way.

For sizing wool and shoddy, the Sphinx Size, manufactured by the Arabol Manufacturing Company, 100 William St., New York City, is of tested and uniform excellence. It is a heavy liquid and easily applied.

Charles Niedner's Sons Co. have placed a repeat order for Humidifiers with the American Moistening Company, Boston, Mass.

Adelbert Frost, night watchman at the Dumbarton Woolen Mills, Dexter, Me., died suddenly at his home of neuralgia of the heart. He was on duty Tuesday night but Wednesday complained of having a severe headache. He leaves a wife and two children. Was born in Ripley, Me., and lived for several years in Dexter. Was 41 years of age.

Fred E. Fenton, superintendent and sales manager of the Robert MacKinnon & Company's knit goods mill at Little Falls, N. Y., died at that city after an illness of two weeks with acute Bright's disease. He was born in Forestport, N. Y., Oct. 14, 1866 and had resided in Little Falls nearly all his life.

Randolph K. Clark, for many years active as a clothing manufacturer of Boston, Mass., died at his home on Massachusetts Ave. of heart trouble. For forty years he had been connected with the Rhodes & Ripley Clothing Company.

Frank A. Devlin died at the Northwestern Hospital, Minneapolis, Minn., as a result of an automobile accident. He was one of the best known men in the knitting trade in that section of the country.

Pennsylvania, Philadelphia. The creditors of the Charter Hosiery Co., Wakefield and Ashmead Sts., Germantown, have accepted the offer of the company to settle all claims against the company on a basis of 33 1/3 per cent., and the business will be continued. The liabilities are $4,700 and the assets $2,700.

Pennsylvania, Philadelphia. Ernest J. Aucott is operating his knitting mill at 4947 Wakefield St., Germantown, until 9 o'clock at night in an effort to keep up with orders. He is now operating 70 knitters, 3 loopers and 3 welters on 176 and 200 needle men's and women's seamless cotton hosiery which he finishes and sells direct.

At 2/5 the cost for installation as compared with leather belting

Plymouth Manila Rope Drives

are far more effective safer and cost much less for maintenance

Plymouth Rope Drives by their absence of slip, steadiness, freedom from electrical disturbances, great durability and low cost make the ideal drive for textile mills.

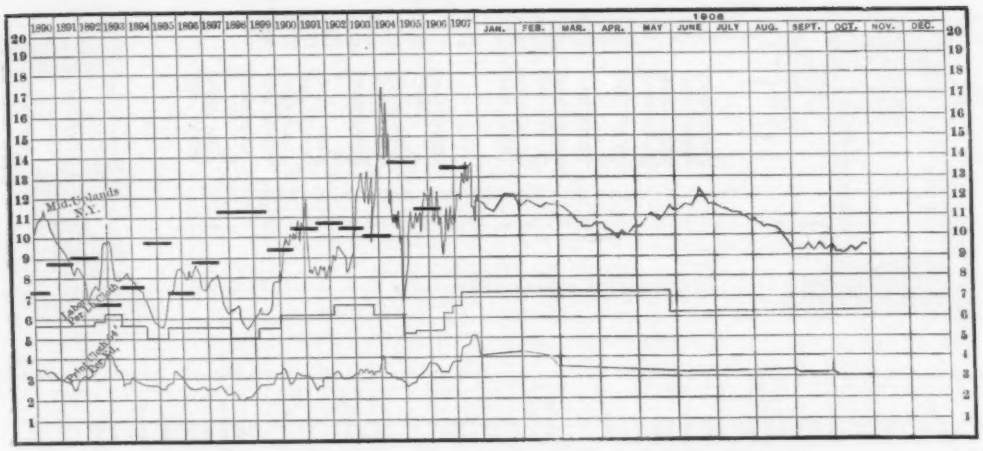
If you are about to build or remodel your mill you may be confronted with the problem of carrying your power to a distance or in a direction out of line with the driving shaft. In such cases the advantage of the rope drive will be manifest. Distance and direction make no difference to the efficiency of this system.

Put your transmission problems up to us. Our long experience in manufacturing, installing and using rope drives is at your service. Let us tell how much they will save in your mill.

Send for our booklet on "Rope Driving."

Plymouth Cordage Co.

North Plymouth, Mass.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907
1908
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Maryland N.Y.
Texas Sea Island
Portuguese Africa

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

The feature of this market has been the readiness with which it has responded to influences tending toward a rise in prices. These have been few and comparatively unimportant. The dominant influences, heavy receipts and restricted consumption abroad, have worked for lower prices. Yet under these conditions the market has advanced quickly as a result of freer purchases by American spinners. These advances have been slight, but indicated unmistakably the general soundness of the market condition. The movement into sight from Sept. 1 to Oct. 23 is reported by the "Chronicle" for a series of years as follows:

1908, Oct. 23	.....	3,008,192 bales.
1907, Oct. 24	.....	2,282,681 bales.
1906, Oct. 26	.....	2,857,835 bales.
1905, Oct. 27	.....	2,998,451 bales.
1904, Oct. 28	.....	3,493,507 bales.
1903, Oct. 30	.....	2,644,353 bales.
1902, Oct. 21	.....	3,217,573 bales.

The world's visible supply on Oct. 24, 1908, is estimated by the same authority at 3,032,245 bales, as compared with 3,034,127 bales at same time in 1907, 3,016,679 bales in 1906, and 3,664,175 bales in 1905.

Globe Mills, Woonsocket, R. I., have placed a repeat order for humidifiers with the American Moistening Co., Boston, Mass.

Tar Pavements.

There has been published in many newspapers throughout the country a cablegram to the effect that the French Minister of Public Works proposes to abandon the use of tar on French thoroughfares and repave them in the old-fashioned manner at a cost of about $800,000. The reason stated is that the fine particles of the tarred road surface thrown up by automobile traffic is killing the trees and other vegetation along the highways so treated.

The "Good Roads Magazine" has made an investigation of this subject, obtaining the opinions of the leading road experts of this and foreign countries. These experts are practically unanimous in the opinion that there is no basis for the statement made in the newspaper despatch.

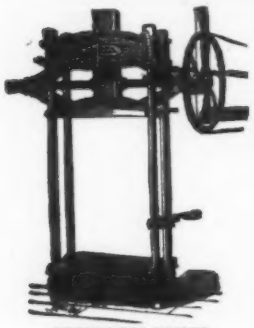
Pennsylvania, Reading. Orders are arriving in good volume at the Brossman Hosiery Mills and the full production is being turned out. During the depression this plant did not shut down, but the working hours were slightly reduced. Mercerized half-hose and ladies' hose are manufactured on 30 knitting machines.

New York, Oswego. It is not likely that the Globe Textile Co. will reopen their plant closed last July. Owing to the falling off in the demand for mercerized linings the company has lost more than their capital stock. F. C. Osterhaut is president and O. S. Osterhaut, treasurer. The equipment consists of 4 knitting mills which were operated by electricity.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



KNUCKLE JOINT.

BOOMER & BOSCHERT

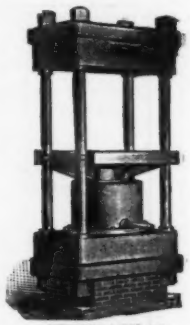
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

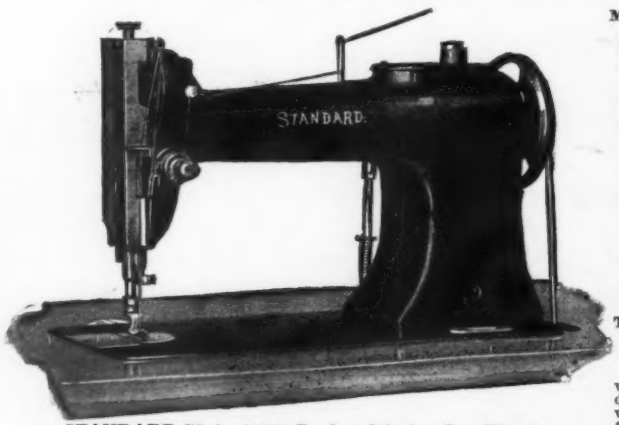
338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



HYDRAULIC.

An Important Point of Superiority

In the Standard 75-1 Lock Stitch Sewing Machine



STANDARD 75-1. 2,800 Perfect Stitches Per Minute.

MAIN CONNECTION:—The main connection of the 75-1 Standard is a decided improvement over all leather or twine belts heretofore used to connect upper and lower shafts. It is really a flexible gear connection, being made up of indurated fibre links or teeth in rows or sets of three or four, twelve sets being in contact with each spur gear or sprocket on upper and lower shafts at all times, eliminating any possibility of the machine getting out of time. Leather belts stretch and thereby throw machines out of time, resulting in trouble to operators and poor work; must be replaced frequently. Twine belts with wire loops have also been condemned as being far from perfect; in fact, no belt has given satisfaction but the flexible gear connection solves the problem of a perfectly reliable connection. It is almost noiseless in operation and its life will greatly exceed that of any belt connection.

THE 75-1 STANDARD has many points of superiority and convenience that will be appreciated by operators.

The efficient service and excellence of work the 75-1 Standard will give and produce day after day without any special attention will create more than ordinary satisfaction to mill owners and machinists.

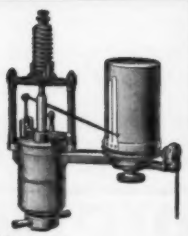
WE OFFER 30 DAYS' FREE TRIAL TO ALL RESPONSIBLE MANUFACTURERS
WE GUARANTEE TO EVERY PURCHASER A THOROUGHLY RELIABLE MACHINE

THE STANDARD SEWING MACHINE CO., 6423C Cedar Ave., Cleveland, O.

Manufacturers of Reliable Plain Stitchers, Button Sewer, Buttonhole, Zig-Zag, Plaiting and Overseaming Machines, Power Table Equipment, Etc.

A Crosby Indicator

In the Hands of a Competent Man Will Increase the efficiency of Your Plant and Cut Down Your Coal Bill. Faultless in Design. Perfect in Workmanship.



Write for Catalogue.

TRADE MARK CROSBY

Pop Safety Valves
Pressure and Vacuum Gages
Water Relief Valves
Blow-off Valves
Rubber Pump Valves

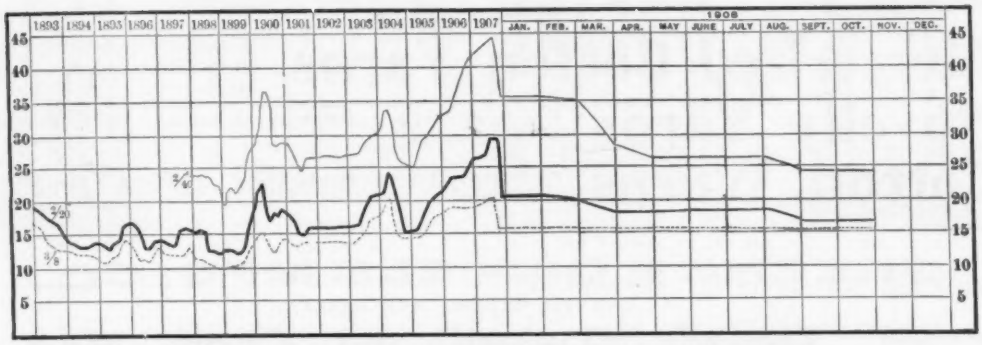
Recording Gages
Single Bell Chime Whistles
Feed Water Regulators
Lubricators – Oil Cups
Gage Glass, Water Gages, Etc.

CROSBY STEAM GAGE AND VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

Business along all lines of cotton products has improved considerably during the past few weeks. Yarns in general and weaving yarns in particular have been in much better demand. Prices on weaving yarn have been advanced from 1 to 1 1/2 cents per pound. The demand on knitting yarns has been fair, but has not been strong enough at this writing to cause any decided advance in price. Prices have hardened all along the line, and buyers are no longer asking concessions. The time seems to have come when jobbers and manufacturers have decided to replenish stocks, which is helping things very much in the yarn business as well as in other lines. Spinners generally are well enough supplied with orders to be independent for the next few months, and we do not look for any break in prices in the near future. The tendency is toward a further advance. We quote as follows:

6s	17¼
8s	17½
10s	17¾
14s	18¾
16s	19¼
18s	19¾
20s	20¼
22s	20¾
24s	21¼
26s	21¾
30s	22¼
34s	22¾
36s	23¼
40s	23¾

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	20
14s	20½
18s	22
20s	23
24s	23½
26s	24
30s	25
36s	28
40s	29
45s	33
50s	36
55s	39
60s	44

Eastern Two-Ply Warps, Carded Peeler.

2/30s	25
2/36s	28
2/40s	29
2/45s	33
2/50s	36
2/60s	44

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	35
36s	37
40s	38
45s	40
50s	45
55s	48
60s	52
70s	57

The Philadelphia Market.

7s and coarser	16
8s and 9s	16¼
10s	16½
12s	17½
14s	17½
16s	18
18s	18½
20s	19
22s	19½
24s	20
26s	20½

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

MONUMENT MILLS,

Manufacturers of
White, Colored, Fancy
and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

The Merwin Paper Company

Hartford, Conn.

Press Papers and Fender Boards

Correspondence Solicited

Mills at Rainbow, Conn. Address Inquiries to Rainbow, Conn.

30s	21
40s	26
50s	34

Southern high grade mule yarn:—

Cones.

10s	18½
12s	19
14s	19½
16s	20¼
18s	20¾
20s and 22s	21¼-21¾
24s	22¼

Southern frame yarn, lower grades:—

6s and 8s	15
10s	15½

Eastern cones (high grade quality):—

10s	19½
12s	20
14s	20½
16s	21¼
18s	21¾
20s and 22s	22¼-22¾

Skein yarn (mostly Southern):—

4s and 8s soft	15¼
10s and 12s	16½
14s to 20s	17-17½
22s	18
10/2	16½
16/2	17
20/2	18
30/2	20
40/2	24
16/3 slack	17½
12/3 slack	17
7/6 skein	15½
8/3 carpet	15
8/3 slack	16
9/4 slack	16

Warps (Southern):—

10s to 12s	16
14s	16½
16s	17
20s to 22s	17½-18
26s	19
14/2	17
16/2	17½
20/2	18
24/2	19
30/2	20
40/2	26

Mixed colored yarns (mock twist, half colors):—

6s to 10s	18-18½
12s to 14s	19-20
16s to 18s	20½-21

Mock Egyptian, 2c. advance over white.

Egyptian, 5 to 6c. above the best quality white.

Botany Worsted Mills, Passaic, N. J., have a large installation of the American Moistening Co.'s atomizing system of humidifiers.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
Brown Building, 185 Summer Street, BOSTON, MASS.
25 South Tryon Street, CHARLOTTE, N. C.

CATLIN & CO.,
Cotton Yarns.
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
128-130 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
DEP'T. FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

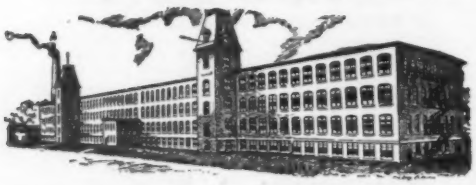
LUDWIG LITTAUER,
SUCCESSOR TO
MOELLER & LITTAUER, 109 Greene St., New York
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
SILK MILL, BOONVILLE, N. Y.

High Grade Hosiery Yarn
White and Colors. All Numbers. Sewing Twines on Cones and Tubes
SPECIALTIES IN WEAVING YARN
Black and White. Double and Twist for Woolen Trade.
CANNON MILLS 53-5 Worth Street, New York
Philadelphia Office, 205-7 Chestnut St.

Reels for Cotton WOOLEN AND WORSTED
Patented Hosiery Winders, Cop Winders and Spoolers.
LINDSAY, HYDE & CO.,
2124 to 2130 East York St., PHILADELPHIA, PA.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

Cotton Yarns

Jenckes Spinning Company
Pawtucket, R. I.

Carded and Combed single and twisted Yarns and Threads from Peeler, Sea Island and Egyptian Cottons, on Cops, Cones and Tubes or in Skeins and Warps. Six Cord Thread Yarns a Specialty **Bleached or in colors**

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND
FITCHBURG, MASS. **WARPS**

F. W. MAURER & SONS CO.

MANUFACTURERS OF

TAPES, BINDINGS, NARROW FABRICS AND EDGINGS FOR NOVELTY CURTAINS

Office, 528 Cherry St. Factories, 529 & 531 Arch St. and 524 Cherry St., and Germantown Ave. & Bristol St.
PHILADELPHIA

Century Cotton Mills

Manufacturers of

Hosiery Yarns

Nos. 10s to 30s Sell Direct

South Boston - - - Virginia

MARYLAND WOOL AND COTTON EXCHANGE
906-908 Streeper St., Baltimore, Md.

High Grade Hosiery and Weaving Yarns all colors.

Operating Well Equipped Bleachery, Dyehouse, Spool, Cone and Twist Mill.

Ballou Yarn Co.

PROVIDENCE. R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Beacon Narrow Fabric Co.

Braids & Tapes

Notre Dame St. FALL RIVER, MASS.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

SPOOL TAPES A SPECIALTY.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

A B C Engines and Heating Apparatus.

The American Blower Co. report a very gratifying list of orders for their A B C engines, heating apparatus and force draft apparatus. In the four weeks ending October 21st this company delivered 14 A B C engines, heating and ventilating apparatus for 34 installations and force draft apparatus for 11 installations. This was in addition to 7 dry kilns and 5 automatic return steam traps.

The Shultz Belting Company.

At the last meeting of the Missouri Manufacturers' Association, J. A. J. Shultz, president of the Shultz Belting Company, and manufacturer of the well-known Shultz "Sable Rawhide" Belting, and Shultz "Aqua" Water-Proof Belting, and other leading lines, was elected president of the Association. This is a Missouri organization with headquarters at St. Louis.

Rhode Island, Woonsocket. Another local plant which has returned to full time operation is the Glenark Knitting Co. Cotton, woolen and worsted knit goods in the web are manufactured.

New York, Amsterdam. It is stated that there will be no change in the management of the Van Brocklin-Stover Co., owing to the death of its president, W. S. Van Brocklin. Vice-president Frank Van Brocklin will continue in charge.

New York, Brooklyn. A large number of orders for immediate delivery have been received by the Long Island Knitting Mills Co. The plant is running overtime five nights a week in order to make deliveries on time. Sweaters, cardigans and fancy knit goods are manufactured on 100 knitting and 150 sewing machines.

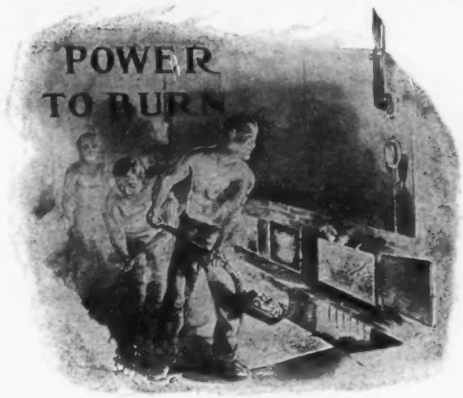
*New York, Utica. There will be no change in the officers of the Utica Knitting Co. nor any buildings erected as the result of the recent increase in the capital stock from $750,000 to $1,500,000. The increase is simply a method of financing the company's indebtedness in order to get on a stronger financial basis. Six mills are operated by this company.

Atlantic Cotton Mills, Lawrence, Mass., have adopted the American Moistening Co.'s system.

New York, Utica. At the annual meeting of the stockholders of the Capron Knitting Co. it was voted to increase the capital stock from $150,000 to $350,000. We are advised that no building or enlargements will be made at the present time.

The Hill Mfg. Co., Lewiston, Me., have adopted the American Moistening Company's system of Humidifiers.

Testing of Yarns.
Count-Twist-Strength-Moisture-Chemical Test
When in doubt apply to
NEW YORK SILK CONDITIONING WORKS
138-140-142 Spring St., New York



Like the man with money to burn, is the factory that uses belts that slip.
Rhoads Leather Belting
is so made as to transmit your power economically, especially when used with
Rhoads Leather Belt Preserver
Both have proved this by many years of service.
J. E. Rhoads & Sons,
Phila., 12 N. Third St. Boston, 105-111 Summer St.
New York, 40 Fulton St. Hamblet & Hayes Co., E. Agts.
Factory and Tannery, Wilmington, Del.

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

DUNCAN & YOUNGS
95 Worth Street, NEW YORK
Practical Manufacturers of
YARNS, THREADS, TWINES, CORDS, ROPE
AND MILL SUPPLIES
Anything in the line you cannot get anywhere else apply to us.

You Save Enough Insurance to Pay for the Equipment.
So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.
Pettes & Randall Co., 150 Nassau St., New York

Lowell Crayons Meet the requirements of any cotton, woolen or worsted mill.
May we send samples? 15 colors and white.
Lowell Crayon Co., Original Manufacturers Lowell, Mass.
Trade Mark on every box.

Pocasset Worsted Company,

Worsted Yarns.

BOSTON
100 BOYLSTON STREET
TELEPHONE 19 OXFORD

NEW YORK
100 FIFTH AVENUE
TELEPHONE CONNECTION

H. HODGSON, Pres. & Treas. FRED HODGSON, Gen. Mgr.

QUEENSBURY MILLS

Mohair, Lustre and Worsted Yarns

—Single and Two Ply—

Crey—Colors on Mixtures **Worcester, Mass.**

French System. **B. F. BOYER CO.,** Bradford System.

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.

WORSTED YARNS

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,
Highland Worsted Mills.

300 Chestnut Street,
PHILADELPHIA, PA.

Woolen and Merino
YARNS
Eaton Rapids Woolen Mills,
EATON RAPIDS, MICH.

Joseph D. Swoyer & Co.,
Manufacturers and Commission Merchants
Woolen, Worsted and Cotton Yarns
HOWARD AND BERKS STREETS,
PHILADELPHIA.

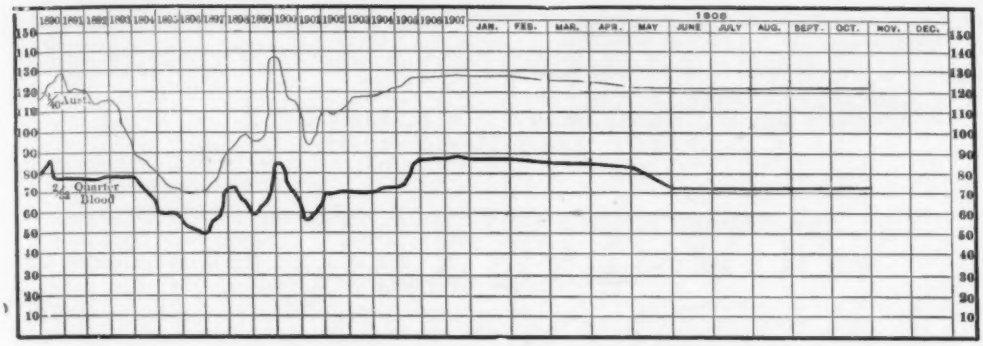


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

The Woolen and Worsted Yarn Markets.

The spinners of worsted yarns report that while the orders they are now getting are for immediate use, with the exception of a few speculative orders, there seems to be little or no future business before them from the dress goods and men's wear trade. Spinners of low grade yarns are doing very little business at the present time. The demand for this class of stock has fallen off and manufacturers are now asking for high grade yarns only. This also applies to the spinners of woolen yarns; the mills making low grades are not doing anything while those working on yarns for knitters and the broad cloth weavers are very busy.

There is no change in the price of French spun yarns. Bradford yarns remain about the same. 2/26, 3/8 blood, can be bought for 80 cents; 2/40 half blood, and 2/40 and 50 delaine can be bought 5 cents per pound cheaper.

There is quite a good business from the knitting trade, especially from those mills manufacturing sweaters, all of whom are doing a brisk business with as many orders on hand as they can handle. Orders from the West are reported as being good with most of it coming in by mail.

The dress goods mills are now getting up their spring lines and all indications point to higher grades and finer cloths. Shadow stripes, while they have had a good run, are still in demand while there is also a good demand for fancy styles in white and colored stripes, with colors on the greenish order. Broad cloths still continue active and will no doubt do so for some little time, but indications are that higher priced goods will be used. The yarns in demand by the dress goods mills are principally of the first quality and quite a number of mills are asking for numbers varying from 2/40 to 2/70 in white and colors.

The salesmen from the men's wear mills are just starting out on the road and up to the present time have not sent in any large volume of business. A few mills have good duplicate orders on their resist goods but the majority of them are still waiting for orders. All indications, however, for next season point to either a higher grade of resist dyes, or yarn and slub dyed goods. When we say a higher grade of resist dyes we mean that the colors must be faster than ever before, as, up to the present time, no one would give a guarantee as to their resist fabrics, other than they were as fast as competing lines. This is not satisfactory to the clothier who is now demanding guaranteed dye. The yarns in resist dyes are chiefly 3/8 blood with the 1/4 bloods being left for the serge makers. We quote as follows:

BRADFORD SPUN YARN.

2/12 to 2/16 low common	60-62½
2/26 to 2/28 common	67½-70
2/12 to 2/20 1/4 blood	70-72½
2/26 to 2/28 1/4 blood	72½-75
2/32 to 1/4 blood	75-77½
2/20 3/8 blood	82½
2/26 3/8 blood	80-82½
2/32 3/8 blood	85
2/36 3/8 blood	85-87½
2/40 1/2 blood	95-1.00
2/40 delaine	1.00-1.05
2/50 delaine	1.10-1.12½
2/40 Australian	1.17½-1.22½
2/50 Australian	1.25-1.30
2/60 Australian	1.37½-1.40
2/24 lustre	85
2/28 lustre	87½
2/30 and 3/32 lustre	90-92½
2/36 lustre	97½-1.00
1/24 worsted and 80s single cotton for raincloths	1.00-1.05
1/24 worsted and 120 single cotton for raincloths	1.15-1.20

FRENCH SPUN YARN.

1/20 1/4 blood	75-77
1/20 high 1/4	80-82
1/20 3/8 blood	90-92½
1/20 1/2 blood	93-95
1/20 high 3/8	85-87
1/30 high 1/4 blood	83-85

NON-FLUID OILS

You can't get blood out of a turnip

and you can't get lubrication out of the talc, rosin, waxes, etc., which most makers use to thicken oil into greases. Organic fillers must be heated by friction before they melt, and then they often decompose into corrosive stearic acid.

NON-FLUID OILS are made dripless, not by adulteration, but by CONDENSING the finest mineral oils. EVERY DROP lubricates and action begins BEFORE the bearings get hot.

This is why so many mills use NON-FLUID OILS exclusively.

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Dept. H. 14-16 Church St., New York

William B. Charles,

Amsterdam, N. Y.

Cotton Yarns, Cotton Cloth, Silesia, Sateens,

For the Underwear Trade.

Knitting and Weaving YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE,

226 CHESTNUT STREET,

Philadelphia, Pa.

1/30 3/8 blood	85-90
1/30 1/2 blood	95-1.00
1/40 1/2 blood	1.00-1.05
1/50 delaine	1.20
1/40 Australian	1.25
1/50 Australian	1.30
1/60 Australian	1.40
1/70 Australian	1.45

The Rag and Shoddy Market.

The heavy weight season has brought no improvement to the market for wool substitutes. Purchases by manufacturers have been small and in view of the disturbing influence in the shape of tariff revision, dealers are inclined to take a conservative view of present prospects. There have been numerous complaints in the local trade that, in spite of the small margin of profit in handling rags, dealers have bid sharply against each other, causing the disappearance of all profit in many cases. A number of the larger Boston dealers have advocated an agreement that would keep prices down and ensure a fair profit. The discussion of the plan has developed so many difficulties and objections that there is now slight prospect of its being tested. All agree that it is desirable, but the ease with which dealers enter and leave the rag trade makes an effective combine practically impossible.

SHODDIES AND EXTRACTS.

White yarn, best all wool	43-47
White knit, all wool, best fine	34-40
White knit, No. 2	30-36
Light yarn, extra fine	30-34
New pure indigo blue	28-30

Merino.

Fine light, all wool	26-27½
Medium light, all wool	17-19
Fine black, all wool	25-30
Fine dark, all wool, best grade	20½-22½
Medium dark, all wool, No. 2	15-17
Red knit stock, strictly all wool	20-22
Red flannel, all wool	
Dark blue for hosiery, strictly all wool, No. 1	19½-20
Dark blue for hosiery, not all wool, No. 2,	16-18

WOOLEN RAGS.

Fine merchant tailors	10-12
Choice light colors	16-17
Browns	11½-14½
Blacks	9½-13
Fine blues, plain	11-12½
Fine dark	10-13
Medium dark	6-10

Worsteds.

Blue	15-17½
Black	19-21

Serges.

Black	10½-11½
Blue	11½-12½

Sixteen Ounces to the Pound Pure Silk
Fast Colors Warranted

A pound of Cheney Silk *means* "sixteen ounces" of *pure silk*. That's the Cheney standard of weight. Whether it's Spun Silk Yarns or Dress Goods

CHENEY SILKS

maintain that standard. Moreover, Fast Colors are *Guaranteed*—a feature of vital importance.

CHENEY SPUN SILK YARNS

are made in the Gray or Dyed; on Spools or Cones, Warped or in the Hank. Organzines, Trams and Singles—full weight—fast colors. Special Yarns made to order for all sorts of Silks or Silk Mixture Goods. Manufacturers' orders promptly executed. Also makers of

Dress Silks, Satins, Gros-Grains, Shower-Proof Foulards, Pongees, Millinery Silks, Upholstery Goods, Ribbons, Sashes, Plushes, Velvets, etc., etc.

CHENEY BROS., *Silk Manufacturers*
South Manchester, Conn.

Salesrooms:
NEW YORK, 477 Broome St. BOSTON, 79 Chauncy St.
CHICAGO, Heyworth Building PHILADELPHIA, 929 Chestnut St.
SAN FRANCISCO, Chronicle Building

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

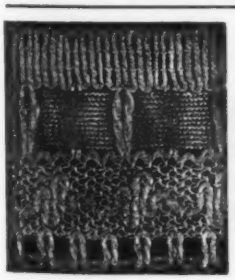
SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 188-190 Market St.—Boston Office, 78 Chauncy St.



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BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Plain 13 to 35s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached Bleached and Colors for Manufacturers' use.

CROCHET LACE EDGINGS Latest Styles in Pant Laces.

229 Church Street 231 . . PHILADELPHIA

Jenning's Lace Works, Brooklyn, N. Y.
Roofed 20 years ago

Barrett Specification Roofs

SERVICE—SECURITY—SATISFACTION

FOR permanent buildings Barrett Specification Roofing will *cost less* per year of service than any other kind.

The Specification itself not only covers the materials to be used but the method of application. It tells how to lay a gravel or a slag roof so that it will give longer service than any other style of roofing.

Every architect, engineer, contractor, owner or lessee of a building will find it to his advantage to have this Specification on file. It may be handed to any roofing contractor and he will at once recognize that a roof constructed in accordance therewith cannot be duplicated for long service and low cost.

Barrett Specification Roofs are adapted for use on factories, apartment houses, office buildings, railroad buildings, warehouses and permanent structures of all kinds. They can be laid over boards or concrete with equal satisfaction.

The fact that such roofs have been accepted all over the United States as a standard and to-day *cover more of the first-class buildings of the country than all others combined* is the best evidence we can offer of their durability and satisfaction.

In fact it is generally recognized by practical men that no form of roof covering will endure like a gravel or slag roof *if the same is properly laid.* The Barrett Specification standardizes the laying of such a roof.

Booklet covering the subject in detail mailed free upon request.

BARRETT MANUFACTURING CO.

New York Chicago Philadelphia Boston
St. Louis Cleveland Pittsburg
Cincinnati Kansas City Minneapolis New Orleans

Flannels.

New scarlet	19-20
New blue	16½-19
Cloakings	4-6

SOFTS AND KNIT STOCK.

Soft woolens, best	5-5½
Old white flannels	12½-13
Old red flannels	12-12½
Old blue flannels	5-5½
Old plaids	7-9
White stockings	19-22
White hood stock	20-23
Clear hoods	9-11

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.60-3.00
Citric, domestic	50-52
Oxalic	8½-9
Sulphuric, 66°, 100 lbs.	1.25-1.80
Muriatic, 18°	1.12-1.85
Tartaric crystals	2.64-3.00

Miscellaneous Chemicals and Dyestuffs.

Acetate of lime, gray, 100 lbs.	2.50-2.90
Alum, lump	1.70-2.50
ground	1.82-2.25
powdered	2.80-3.32
Aqua ammonia, 26°	
Ammoniac, sal., gray	
Borax, bbls.	4-7
Brimstone, crude, ton	26-52
Copperas	61-82
Cream tartar, crystals	22-25
Fuller's earth, powdered, ton	19-20
Glauber's salt	51-65
Potash, chlorate, crystals	11-12½
powdered	12½-13
carbonate	6½-7½
Soda, bicarbonate	1.60½-1.76
Soda, caustic, domestic, 60 per cent.	1.73-1.90
Sal., American	72½-86
Vitriol, blue	5½-6
Acetate of soda	4-6½
Acid, picric, best crystals	25-50
tannic, commercial	30-41
Albumen, egg	61-72
blood	24½-32
Alizarine, red	17½
Aniline, oil	11½-12
salt crystals	13
Bichromate of potash, American	9-10½
Bichromate of soda	8-9
Bisulphite of soda	3-4
Cutch, mat	5½-7½
Dextrine, imported potato	6½-10½
Divi-divi, ton	45-68

North Carolina, Lumberton. It is reported that the Dresden Cotton Mills and the Lumberton Cotton Mills are planning to consolidate and erect a new mill building. R. B. Caldwell is president of both concerns and H. B. Jennings is secretary and treasurer.

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Seven large half red morocco bound volumes compiled especially for the Textile Manufacturer, Superintendent, Selling Agent, Designer, Overseer, Second Hand and Clerk—3,000 7 x 10 inch pages devoted entirely to good, sound, practical textile information—printed on special quality paper and indexed for ready reference. 2,000 illustrations, diagrams, formulas, etc., to simplify and thoroughly explain the text. Every process in connection with textile work is thoroughly explained, from the raw fibre to the packing case. The simplest and most complete textile work yet published.

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Tex. World Rec. 11-08.

Mandeville Cotton Mills, Carrollton, Ga., have adopted the American Moistening Co.'s system of humidifiers.

North Carolina, Lexington. Another hosiery mill may be established at this place. J. W. Greenfield of Kernersville, N. C., is reported to be interested in such a project but has made no final decision.

*North Carolina, Winston-Salem. Reports stating that John T. Patrick of Wadesboro, N. C., was interested in the organization of a company to establish a knitting mill at this place are incorrect. Mr. Patrick advises that there is absolutely no foundation for the report.

The American Moistening Company, Boston, Mass., report a large increase in business, receiving orders for the months of August and September for their humidifying system from the following mills: Taylor Mfg. Co.; Standard Silk Co.; Mandeville Cotton Mills; Aurora Cotton Mills; American Deli Tobacco Co.; Walton Cotton Mill Co.; Standard Hosiery Co.; B. B. & R. Knight Co.; Ensign-Bickford Co.; Pittsfield Mill; Wood Worsted Mills; Farwell Mills; Simpsonville Cotton Mills; Cheney Bros.; Waterhead Mills; Indian Head Mills of Alabama.; Grosvenor-Dale Company; Jamestown Cotton Mills; Globe Mills; Clark Thread Co.; Mittineague Paper Co.; Atlantic Cotton Mills; Barnard Mfg. Co.; Walcott & Campbell Spinning Co.; Clinton Cotton Mills; Rushton Cotton Mills; Fountain Inn Mfg. Co.; Union-Buffalo Mills Co.; Woonsocket Worsted Mills; Bibb Mfg. Co.

Oregon, Albany. A. J. Caldwell of Stayton is reported to be interested in a project for starting a hosiery mill at this place. Mr. Caldwell has been in this city investigating sites. A woolen mill is also projected for this city; A. R. Jacobs of Oregon City Mfg. Co., Oregon City, being interested.

Pennsylvania, Doylestown. Harvey O. Sheatz, who purchased the plant formerly operated by the Doylestown Hosiery Co., which failed some time ago, is operating the plant to its full capacity on high grade hosiery.

Pennsylvania, Philadelphia. It is reported that William Bennett, who has been operating a plant for the manufacture of women's and misses' ribbed and flat cotton hosiery on 120 knitters, contemplates selling the plant and retiring from business.

Chemische Aniline Works
Manufacturers of
Anthracin & Coal Tar Products
24-26 Stone Street
New York

EDWIN F. SCHOFIELD
Cotton Waste
IMPORT and EXPORT
45 S. 3rd St. Philadelphia

William B. Charles,
Amsterdam, N. Y., U. S. A.
Cotton and Wool Wastes
COTTON YARNS
Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

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W. H. H. SLACK & BRO.
SPRINGFIELD, VT.
Established 1871
FLOCKS

IF
you size or finish your goods,
IF
you strip your goods,
DIASTAFOR
can show
ADVANTAGES
from standpoint of economy as well as quality of fabric.
The American Diamalt Co.
Riverside, Cincinnati, Ohio

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The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1908	$20,862,698
LIABILITIES (Including Capital)	13,659,487
RESERVE AS A CONFLAGRATION SURPLUS	500,000
NET SURPLUS OVER ALL LIABILITIES AND RESERVES	6,703,211
Surplus as Regards Policy-holders	10,203,211
Losses Paid Since Organization Over	110,000,000

Note amount of surplus after providing for San Francisco and other conflagrations.

HOME Policyholders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

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AREUNAH M. BURTIS, Secretary.
CHARLES L. TYNER, Secretary.
HENRY J. FERRIS, Asst. Secretary.

*New Jersey, Garfield. It is stated that the proposed woolen and worsted mill in which Forstmann & Huffmann Co. of Passaic are interested, will be built at this place. A site has been selected and a survey is being made by Anton L. Pettersen. Three German firms are interested with Forstmann & Huffmann Co. Reports give the capital stock at $3,000,000.

New Jersey, Hoboken. The Novelty Web Co. has been incorporated with capital stock of $35,000. Robt. D. Geswin, Edward A. Sidman and H. Le Roy Bell are the incorporators. It is understood that a manufacturing plant will be equipped.

New Jersey, Paterson. The Mason Co. has been incorporated at Trenton with capital stock of $10,000, by Daniel Mason, Arnold Brunner, Siegfried Butz. It is understood that they will manufacture machine wipers and crash cloths.

New Jersey, Paterson. A corporation known as the Tynan Throwing Co. have been granted a charter with capital stock of $50,000. Elizabeth A. Tynan, Leonard J. Tynan and Annie E. Tynan are the incorporators. Purposes given as to engage in throwing silk, including making of silk organzine, etc. It is understood that the new corporation takes over the business of Jos. E. Tynan plant of 5,000 spindles, located in the Dale Mill.

*New Jersey, Paterson. On application of the attorneys for the firm, and assented to by the reorganization committee, the bankruptcy petition filed on March 18 against A. & M. Levy, manufacturers of silk ribbons, is dismissed. The terms of settlement were slightly changed from those previously given out in order to give the new corporation more cash working capital. The firm is to pay creditors 20 cents cash, 40 cents in four months' notes, 15 cents in notes payable at the end of December, 1909, and 25 cents in preferred stock in the new corporation with 6 per cent. interest. The new corporation has a capital stock of $700,000 and starts with a cash working capital of $510,000. The members of the old firm are associated with the new corporation.

New Jersey, Paterson. The plant of the Hengeveld-Bohl Silk Co. is being operated day and night with two shifts of help. This is another evidence of the renewed activity in the silk business of the country.

*New Jersey, Paterson. Anton Schmidt has made a satisfactory arrangement with the creditors of the Taylor Silk Mfg. Co. and has turned the plant over to the John W. Taylor Silk Co. for the consideration of $8,000. We reported in previous issues the organization of the John W. Taylor Silk Co. wiith capital stock of $125,000.

New Jersey, Princeton. It is understood that New York parties have been looking over the old Titus Mill property with the end in view of purchasing, but no facts of a sale or lease could be learned.

New York, Buffalo. The Preston Fabric Tire Co. has been incorporated with capital stock of $100,000. Christian Wesp, Morris R. Evans and James F. Preston of this city are the incorporators. It is not known whether this refers to a manufacturing company.

The WM. H. LORIMER'S SONS CO.,

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MERCERIZED YARNS

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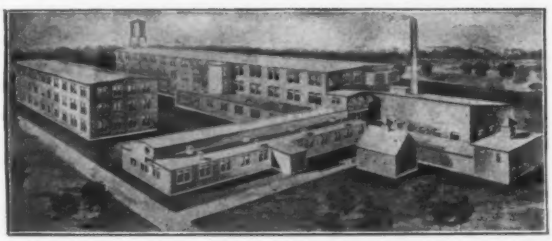

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Cotton Yarns

in skein, and long and short

CHAIN WARPS

Fast Colors a Specialty.

Daily Capacity 30,000 lbs.

Fast Colors and Black for Worsted Trade.

Office and Works, Pawtucket, R. I.

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YARNS BLEACHED AND DYED (delivered on cones)

BLEACHING and DYEING

ESPECIALLY FOR THE

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CONE WINDING FOR THE TRADE

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N. B. Bleached Finishing Yarns on Cones for Underwear, always in Stock.

JOHN F. DAVIDSON, Orianna Bleach Works

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Of Turkish Towels, Cotton Yarns, Underwear and Tapes

Turkish Towels Made Up to Suit the Trade and Shipped to Any Point

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The remarkable German finish for cotton, wool and worsted cloths

is the Simplest and Cheapest means for giving Goods Fullness, Body and Weight.

is guaranteed harmless to fibre and color, does not coat the yarn, but closely unites with it, eliminates dusting off during the napping process. Does not change goods while in stock.

Write for price and particulars

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New Brunswick, N. J.

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Dyers and Finishers

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New York Office, Silk Exchange Bldg., Cor. Broadway and Broome Sts.

Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas, Panamas, Poplins, Serges and Cheviots, Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eoliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

SPECIAL ATTENTION IS GIVEN TO THE REDYEING OF ABOVE

UTICA WILLOWVALE BLEACHING CO.

Sheetings, Shirtings, Lawns, India Linons. Everything in White Goods.

John MacManus, Superintendent.

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CONE AND TUBE WINDING

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Bleachers and Dyers of COTTON YARNS and STOCKINET

Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

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Dyers of Skein Silk
FOR ALL TEXTILE PURPOSES
Fast Colors on Silk for Worsted Manufacturers.
Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

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Dyeing, Coneing, Twisting and Tubeing of Cotton, Woolen and Worsted Yarns.
Dyers of Cotton Warps, and Hosiery in Fast Black and Colors.

Cross-Dye Colors a Specialty.
Yarns Furnished on Dresser Spools.
Dealers in All Kinds of Yarn for the Trade.

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MAX SARFERT, Prop,
Kensington & Allegheny Aves., Philadelphia.

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51 AND 53 FRANKLIN STREET, NEW YORK
PAPER AND TWINE MERCHANTS
FOR FINISHERS OF TEXTILE FABRICS
"ROYAL" PRESS PAPERS

THE SOLWAY DYEING & TEXTILE CO.,
PAWTUCKET, R. I.

Dyers, Bleachers and Mercerizers

of Cotton Yarns in Long or Short Chain Warps and Skein in FAST COLORS, for all purposes.

Also Dyers of Genuine Turkey Reds.

We are Dyers of all kinds of YARNS Cotton AND Warps

We are sure we can give you better work and better service than you can get elsewhere. A trial will convince.

T. BROPHY'S SONS, Jasper St., above Clearfield St., - PHILADELPHIA, PA.

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Made from high and selected grades of lumber to suit all the different machines, such as Klauder-Weldon, Hussong, Lorimer, etc. Plain or burnt finish as desired. Sticks for all sizes of Hand Kettles from natural water grown cedar.

Dry, Sulphur and Bleach House Poles, Wringing Sticks, etc. from selected lumber or natural cedar

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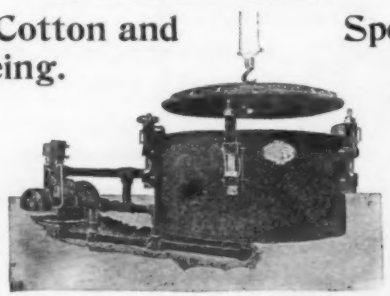

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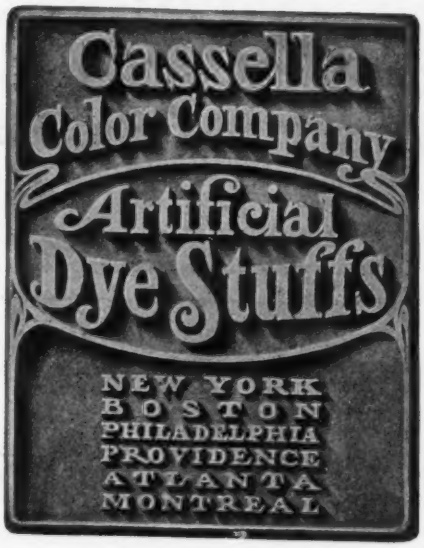

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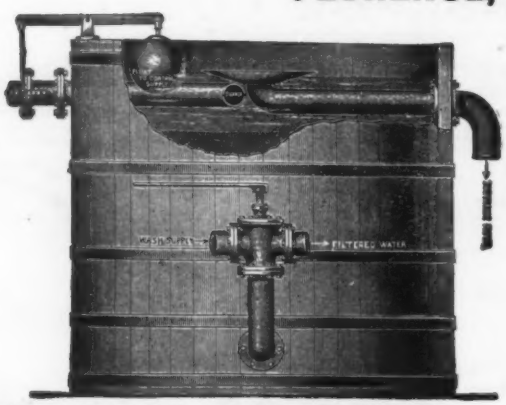

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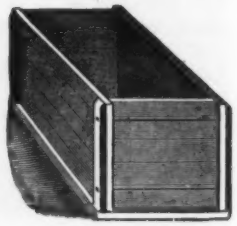

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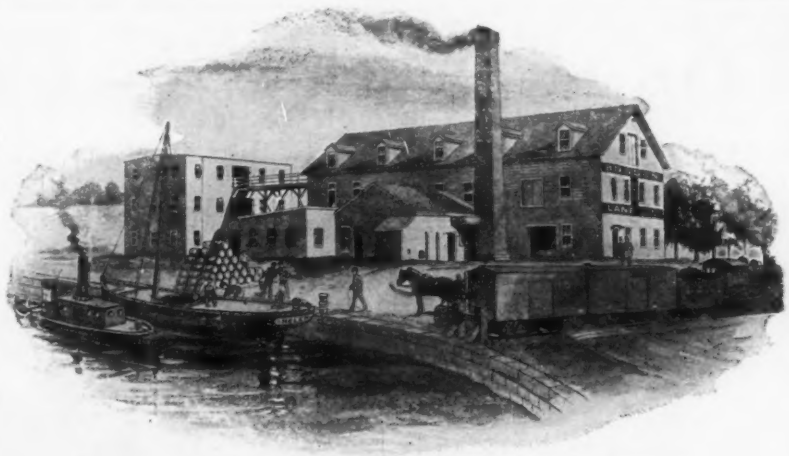

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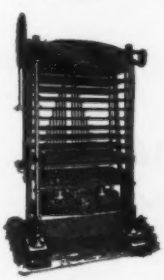

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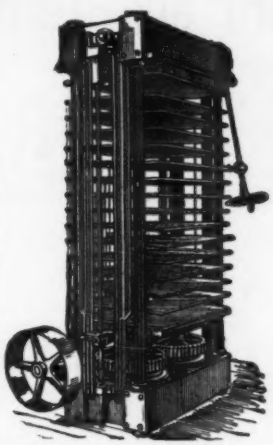

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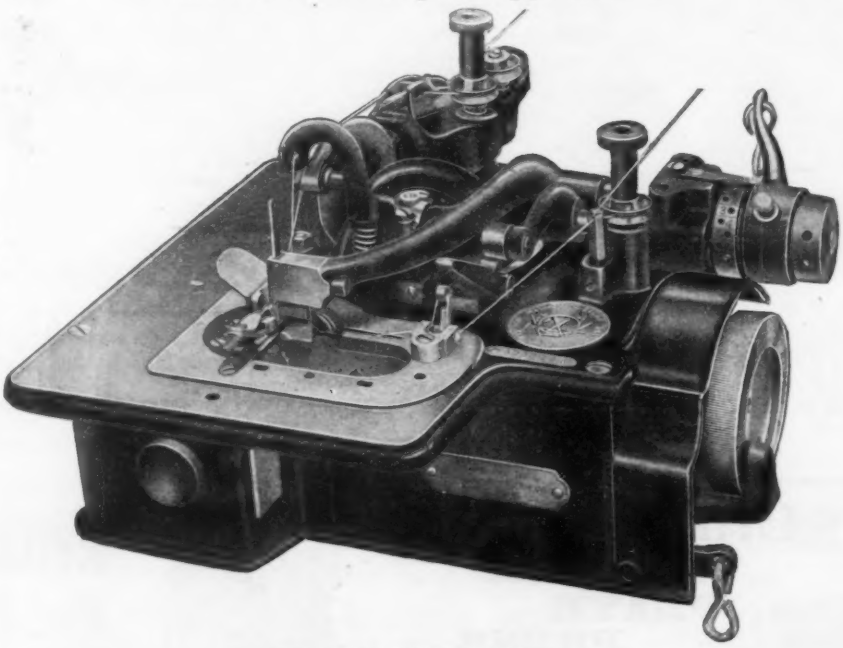

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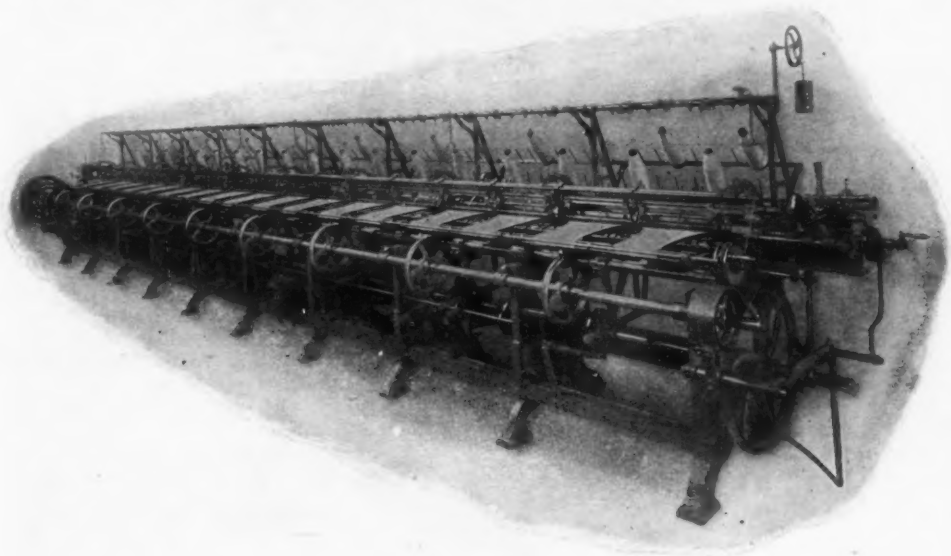

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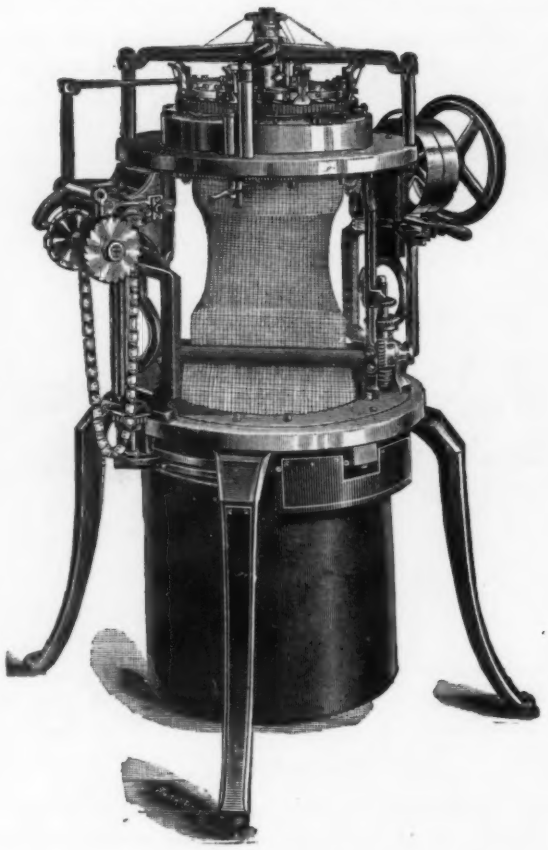

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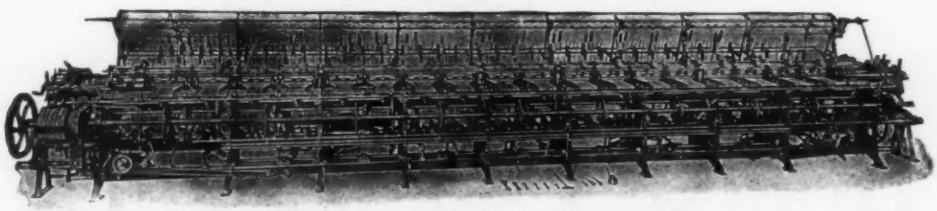

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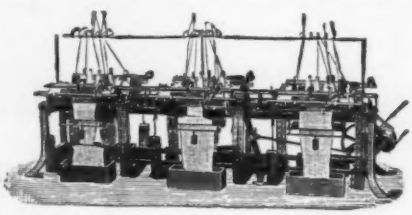

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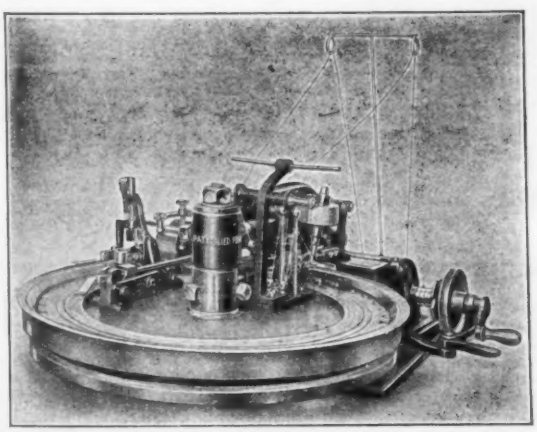

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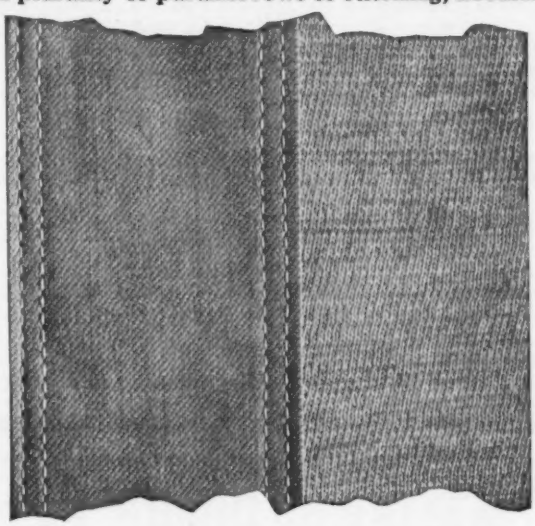

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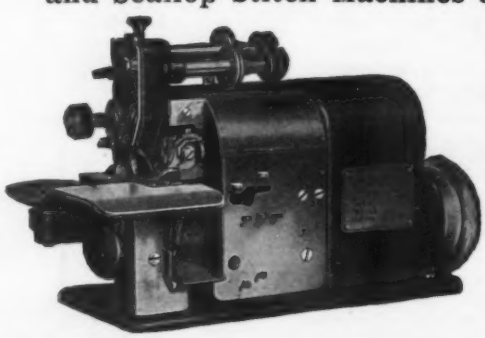

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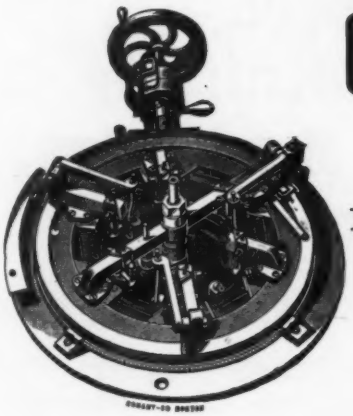

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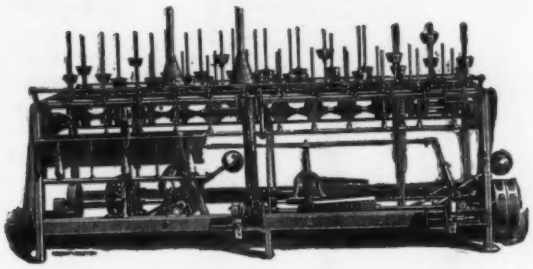

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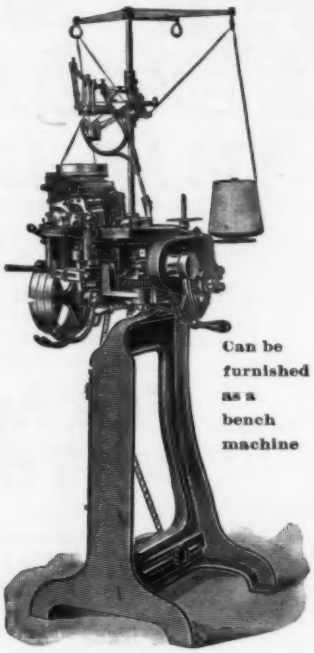

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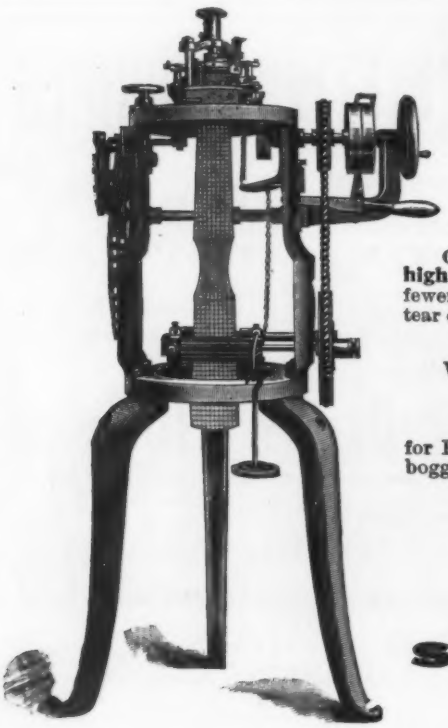

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Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

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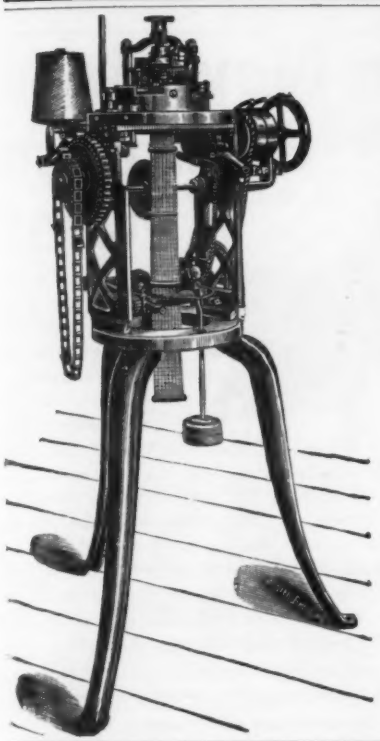
LITTLE FALLS, N. Y.



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213-215 Race Street, Philadelphia, Pa.

BUILDERS OF

Knitting Machinery

For HOSIERY and UNDERWEAR.

Complete Estimates Furnished. ***Send for Particulars.***

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.

For Half Hose Tops Only

AUTOMATIC POWER TOP CUTTING MACHINES

Will cut, automatically, 1000 dozen half hose tops, or cut, and automatically pile in heaps of one dozen each, from 400 to 700 dozen misses tops, according to length, per day.

ROBINHOLD MACHINE CO.
650 North 8th St., Reading, Pa.

For Half Hose, Misses and Childrens Tops

WILLIAM C. BULL,

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For Ladies', Gents' and Children's Goods.
Latest Styles.
Best Workmanship.

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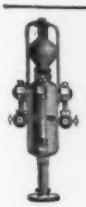
OF EVERY VARIETY.



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FOR EMBOSSING AND OTHER CALENDERS.

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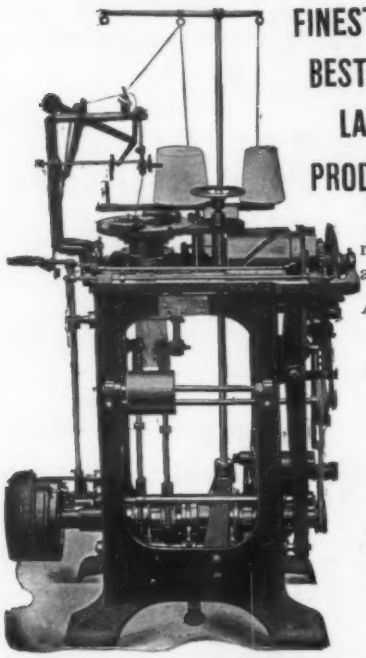
Stands for



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Greatest Variety of Laces and Novelties.

Allautomatic.

Lowest Cost for Operating

Also

Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

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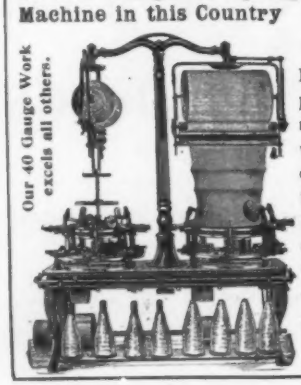
We are the Oldest Manufacturers

of this Design of Spring Needle Knitting Machine in this Country



40 years' experience

Do not be misled by people who became manufacturers in 1903 without any previous experience who are trying to represent that they are the oldest manufacturers. Investigate. Call and see our fine gauge work.

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The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
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"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Mayo Knitting Machine & Needle Company

Franklin, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers like our Latch Needles

because we make a superior grade of needles.

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STANDARD MACHINES FOR HOSIERY MAKING

The STANDARD F, with attachments, can make any and all of these fabrics:

Plain Goods
Plaited Work
Three Color Stripes
Tipped Heel and Toe
White Foot
Changed Heel and Toe
Garter Top
Loopers Slack Course

Most Stockings—Best Fabrics—Longest Life

Standard Machine Company

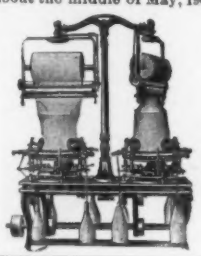
OFFICE AND SHOW ROOMS

330-340 North 12th St., Philadelphia

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:
Cross Question 123. How long have you been a manufacturer of knitting machines? Answer. I started in this business about the middle of May, 1900.



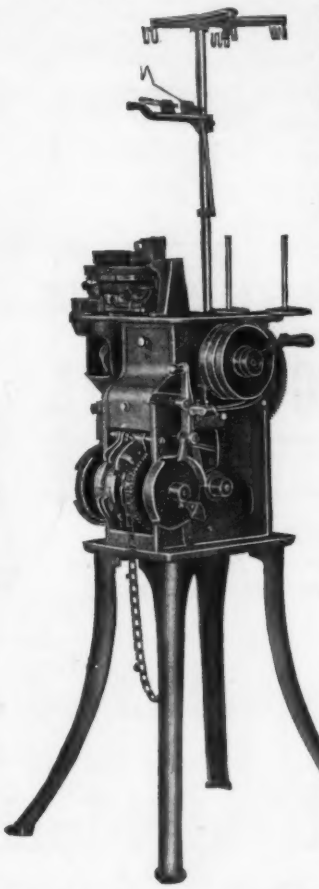
Tompkins Knitter

This design was adopted in 1875.
BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLY Was born, according to his testimony in the case above cited.

"THE BANNER"
Hemphill's Latest

A FULL AUTOMATIC MACHINE

Specially adapted to



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and
String Work
also
High Splice
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Largest Production
More Yarn Changes
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Produces a Superior Quality of Work.

MANUFACTURED BY THE

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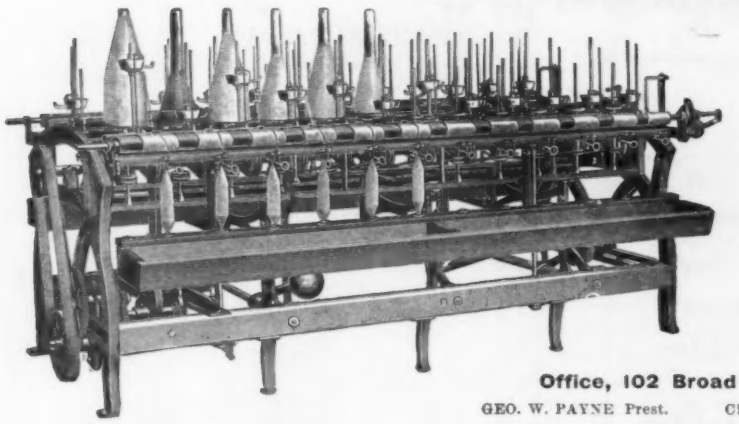
OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers,
Wind for Cop, Skein or Bobbin.



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Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

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LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

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Knitting Machines,

Hand and Power.

HIGH CLASS WORK ONLY.

Paris 1900 "Grand Prix"
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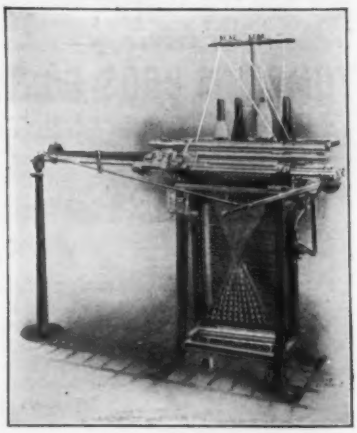
For catalogues and particulars apply direct to Couvet Works.



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Full Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.
RANGE ON HALF HOSE AND LADIES FROM 260 NEEDLES DOWN.

3-4 AUTOMATIC KNITTER

With Lace Effects.

Exclusive rights to BROWN'S LACE ATTACHMENT.

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Both single and double Stitch.
with the
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Straight Points.

Beattie Machine Works,

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CHARLES COOPER,

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MANUFACTURER OF

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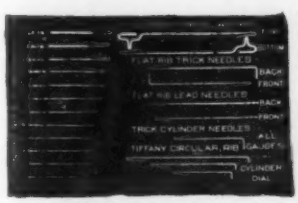

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder, **Spring Needle Cylinder Rib-Top Machines** for making Cuffs, Drawer Bottoms and Shirt Borders. **Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.**

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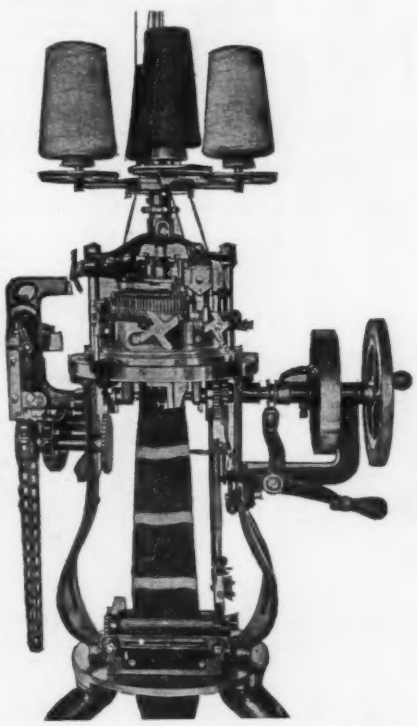

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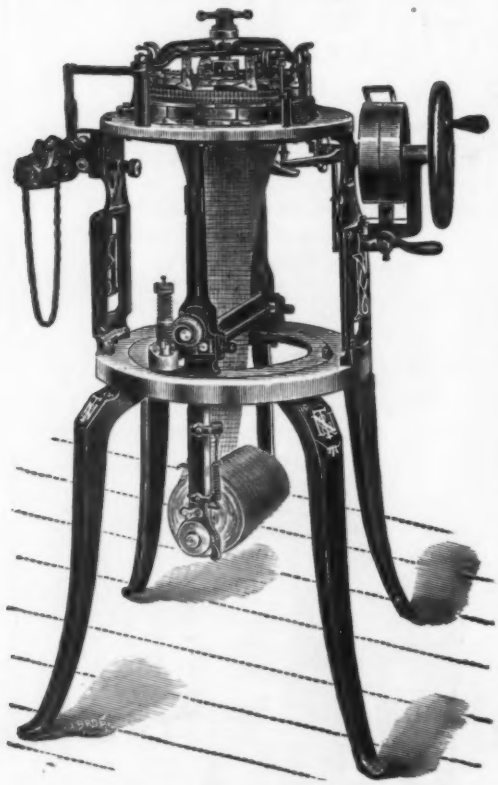
For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.



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QUALITY OF FABRICS AND PRODUCTION
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Latest
Simplest
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MAYO'S

New Full Automatic Knitter

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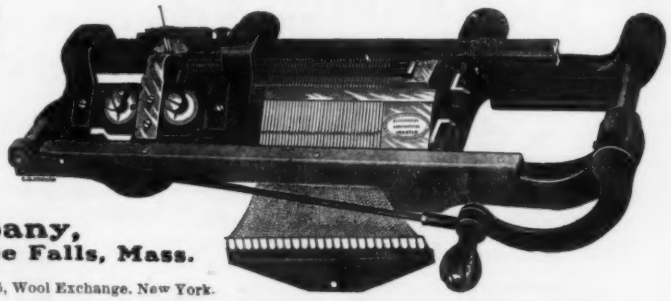
The LAMB

LEADER OF KNITTERS

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.



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were the first machine builders in Chemnitz, Germany, to construct

Full Fashioned Hosiery Machines

upon the Cotton principle and which since their introduction have never been excelled by any other machine builder; be it in construction or productiveness. Built in all gauges and for any material, cotton, wool, lisle or silk.

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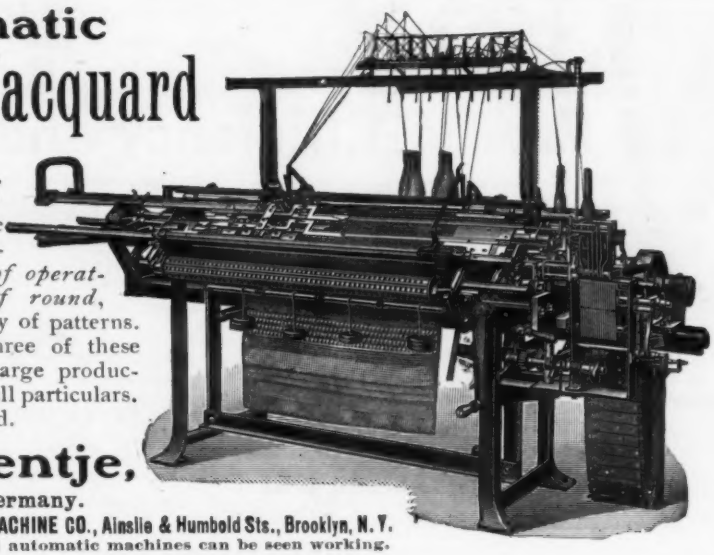
Recognized as the best in the market. With Jacquard attachment allowing *change of operating mechanism every half round*, therefore unrivaled in variety of patterns. One operator attends to three of these machines. High speed. Large production. Ask for samples and full particulars. State gauge and size you need.



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Representatives, **AINSLIE KNITTING MACHINE CO., Ainslie & Humbold Sts., Brooklyn, N. Y.**

Where all kinds of our hand and automatic machines can be seen working.

American Raveller Company

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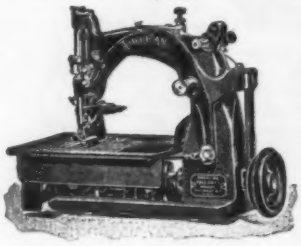
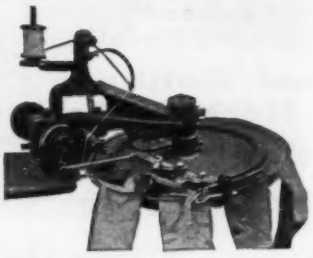
High Speed, Elastic Stitch Sewing and Trimming Machines



Also ravelling machines for making knit underwear and hosiery full fashioned.

2 line and twin needle machines for fancy stitching.



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GEO. W. STEVENSON, Inventor and Proprietor

315-315½ Elm Street, Reading, Pa.

Builders of

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The Automatic Singeing Machine is the only machine on the market equipped with a **Patent Single Plate Positive Stripping Device,** which saves gas, hose and labor. Built in two sizes double and single feed.

The Cold Hosiery Press is very simple to operate, is less expensive, no complicated parts and requires very little power. With this press the life of the yarn is retained and the finish of the hosiery after coming out of the press cannot be equalled by any other press hot or cold. The press is built in two sizes.

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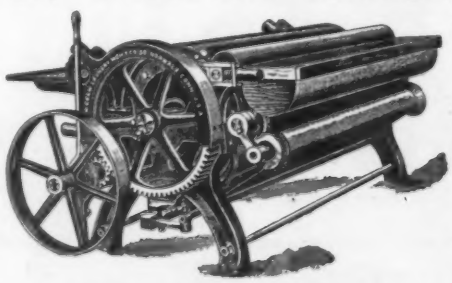
Of Proven Efficiency and Economy



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No Broken Buttons

This machine irons and presses ribbed and flat underwear and other knit goods, giving a fine, smooth, attractive finish, which cannot be as easily obtained in any other way. It does not break buttons and can be adjusted to all grades. It is so easy to operate, so inexpensive to maintain and is of such large capacity that knitting mills throughout the country effect fully 50 per cent. saving through its use. For particulars, prices and list of knitting mills using our machinery address us at our factory.

Saves Half Your expense

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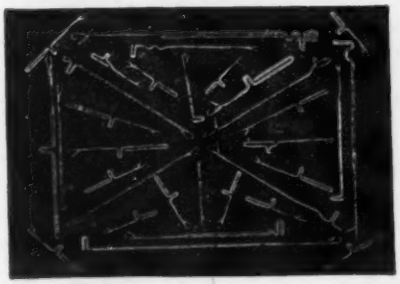
Sole Manufacturers of the "Craw" Automatic Ironing and Pressing Machine

TRY OUR "SUPERIOR" OR SUNKEN RIVET-HEAD NEEDLES

They will save you money.



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WM. COREY CO.,

Manufacturers of Knitting Machine

Latch Needles

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The best Hosiery Needles in the market.

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Patent and Regular Latch Needles

Needles for all makes of Knitters and Ribbers.
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Special Needles made to order.

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Cleans Wool, Floors, Anything.

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For the handling of wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty. This conveyor is patented. Beware of infringement.

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RIVETS GUARANTEED. Samples on application. SPRING NEEDLES A SPECIALTY.

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both Cylinder and Wicket Gate, giving **ENORMOUS** power are used in hundreds of textile mills throughout the world.

We make a specialty of designing turbines to meet the requirements of the public.

We build Francis turbines in spiral flumes to operate under high heads.

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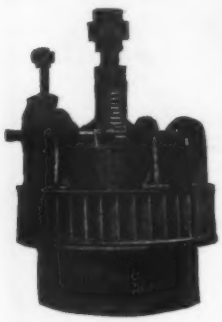
S. MORGAN SMITH COMPANY, York, Pa., U.S.A.



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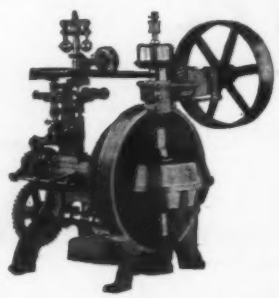
On Horizontal or Vertical Shafts.

These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.



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OUR compensating type more fully meets the needs of Textile Mills than any other. This is due to its being the only successful quick acting, mechanical, governor and its perfect control of large as well as small changes. 1500 of this type in use in mills and electric power plants.

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THE NATURAL RESULT

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Goulds Efficient Power Pumps

We manufacture a complete line of Triplex Pumps for every service and will be pleased to send catalog on application.

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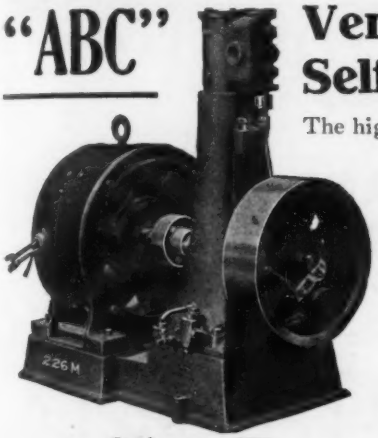
"ABC" Vertical Self-Oiling ENGINES



The highest standard of excellence in design and workmanship ever embodied in steam engine construction.

Runs from 3 to 6 months without oiling or adjusting.

Will save their original cost in a year—in saving of fuel and oil.

1¼ to 65 Horse Power

For belt or direct connection.

Electric Light Your Mill

With an "ABC" Engine Driven Dynamo.

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ELEVATORS

ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.

The "Kellogg" Float Valve

Is Warranted Always to Operate

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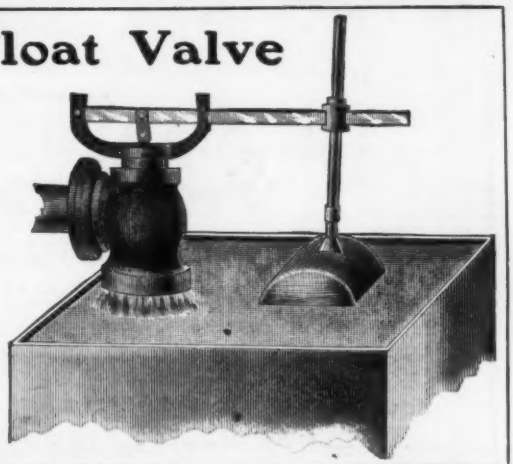

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Manufacturers of the Original "McCormick Holyoke Turbine." Both Vertical and Horizontal

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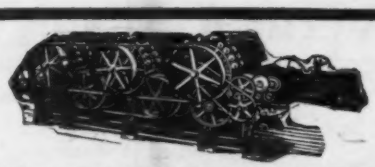

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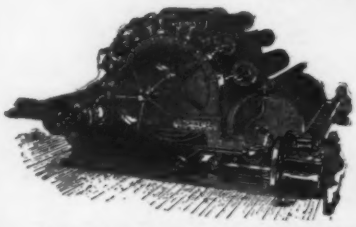
For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



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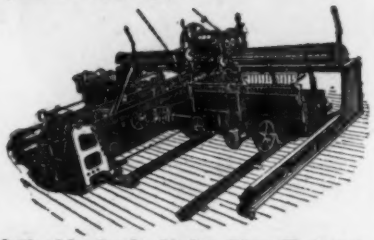

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Complete Equipment for Manufacturing Cotton Batting for All Purposes.

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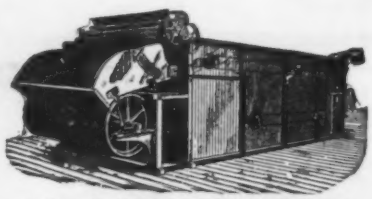
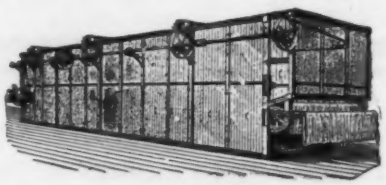
For Cotton Stock, Wool Stock, Rags, Yarn, Cloth Underwear, Stockings, etc.



Automatic Cotton or Wool Stock Dryer.



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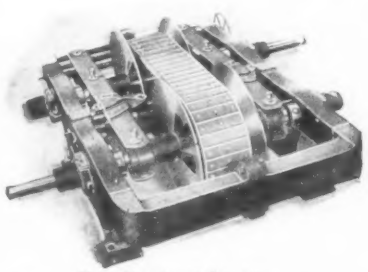

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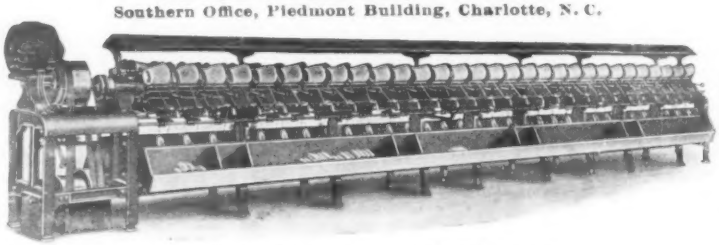

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